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A model for the prediction of advancements in the Navy enlisted force

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A MODEL FOR THE PREDICTION OF ADVANCEMENTS IN THE NAVY ENLISTED FORCE

by

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A modified regression model was found to be sufficiently accurate to predict advancements by LOS using the volume of advancements and the inventory by LOS as predictor variables. This model was then used to find a relationship between the mean LOS of advancements and the volume of advancements. Such a relationship was not readily verifiable from the data. Some-

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This investigation of the advancement system of the Navy Enlisted Force was sponsored by the Navy Personnel Research and Development Center (NPRDC), San Diego, California. The NPRDC staff is thanked for their generous assistance at all stages of this research effort.

Special thanks are due to Mr. Joe Silverman, Associate Director for Manpower Systems. Mr. Silverman articulated the main problem area in the first place and maintained his interest in it throughout the study. His sharp insight into the Navy Manpower System has been invaluable to this investigation.

Mr. Robert Boller of the NPRDC staff is thanked for arranging for the timely delivery of the data base to Monterey and the assistance he provided whenever new data problems arose.

Professor Richard W. Butterworth of the Naval Postgraduate School has been principal investigator of the project under which this study was performed. His contribution to it ranged from the theoretical aspects to the computer programming details and involved every part of this investigation. For this, as well as his critical comments to this report, I wish to express my gratitude.

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1. Introduction.

This study was part of the Navy Enlisted Personnel Modelling Project funded by the Naval Personnel Research and Development Center (NPRDC), San Diego, during FY 1976. The topic of this study - the Navy Enlisted Personnel Advancement System - was specifically suggested by the NPRDC staff.

The purpose of the study was to improve upon current methods used by the Bureau of Naval Personnel, for predicting the length of service (LOS) distribution of advancements in the enlisted force. The initial charge was even more specific: to investigate whether the total "volume" of advancements to a pay grade of the enlisted force has measurable influence on the way in which the advancements are distributed by LOS. The conjecture here was that a larger volume of advancements should result in a younger set of advanced personnel, since larger volumes of advancements tend to draw on the younger personnel serving. While this argument seemed reasonable, it had never been substantiated quantatively. The hope was that the data would bear out the validity of the conjecture and provide an initial impetus to building a model that will predict the advancement LOS distribution taking into account the volume of advancements as well. The current method uses a distribution historically estimated, independent of the volume of advancements.

2. Summary.

A modified regression model was found to be sufficiently accurate to predict advancements by LOS using the volume of advancements and the inventory by LOS as predictor variables. This model was then used to find a relationship between the mean LOS of advancements and the volume of advancements. Such a relationship was not readily verifiable from the data. Somewhat contrary to expectation, it was found that the mean LOS of advancements may be either a decreasing or an increasing function of volume. Whether it is the former or the latter depends on the pay grade, rating and fiscal year in question. A possible explanation for both the decreasing and increasing type of behavior is also offered.

All numerical work was programmed in APL and performed on the IBM 360/367 computer at the W. R. Church Computer Center of the Naval Postgraduate School.

3. The Navy Enlisted Force, Its Data Base and Current Models.

The Enlisted Force Structure of the Navy is amply described in other publications. References [1] and [2] are mentioned here, since they are also relevant to the main topic of this report and give a description of the enlisted force. It will suffice to describe the structure here as being organized about three variables:

(i) approximately one hundred different ratings that specify the occupational skill of enlisted personnel;

(ii) nine pay grades that determine the pay category of each individual; the bottom three contains the non-petty officer, "non-rated" force; while the top six is comprised of the rated petty officer force;

(iii) thirty-one length of service (LOS) years, with the last (31st) cell containing all those with at least thirty years of service.

The data base is organized in matrix forms for quantities such as inventories, several types of losses and gains, re-enlistments, advancements, recruits, etc. for each of the hundred-odd ratings. Each matrix contains 32 rows and 11 columns. The rows stand for the 31 LOS years and their totals. The columns represent coding (that identifies the rating and the FY), the nine pay grades and their totals. In addition, there is a set of matrices for ALLNAVY comprised of the sum of all ratings. All matrices are specific to some fiscal year.

A highly complex computer model, called FAST, (see [2] and [4]) was built by the NPRDC staff to enable personnel planners at the Bureau of Naval Personnel to understand better the compli-cated interdependencies among variables of the enlisted force,

answer policy questions and make predictions. A simplified and more flexible model, called MINIFAST (see [5]), was developed by Professor R. W. Butterworth at the Naval Postgraduate School, under the same research project as this study, to tackle the same problems as FAST but more expeditiously. One of the common problems faced by both FAST and MINIFAST is the modelling necessary to estimate the LOS structure of advancements. This is necessary, because the advancement system in reality is extremely involved. Both FAST and MINIFAST currently employ methods which overlook the plausible dependence of LOS distribution on volume for advancements. It is hoped that this study will contribute an alternate method which both FAST and MINIFAST could incorporate, as well as provide a better understanding of advancements in general.

4. The Advancement System of the Navy Enlisted Force.

The manner in which the Navy promotes members of the enlisted force from one pay grade to the next higher one will be referred to as the advancement system. It is a highly complex procedure whose details will not be fully described here. Since FAST duplicates many of the details of the system, reference [3] offers a glimpse at the intricacies of the Advancement System. It is a process that begins at the highest pay grade. First the requirements for pay grade nine are determined,vacancies estimated, and attempts are made to fill these vacancies with the advancement resources in pay grade eight. In this manner the process continues to the next lower pay grade where the vacancies were created partly by advancements determined at the previous step. The term "advancement resources" is vaguely defined, but it usually refers to a subset of the population in the pay grade from which advancements must come. The subset may be the "Test-taker" or "Test-passer" population. Other details, not discussed here, involve such items as the apportionment of advancements among the ratings, "token" and "examined" advancements, promotion zones and waiver zones in the LOS dimension, etc.

The approach taken by this study was, precisely, to devise a model that predicts advancements by LOS years for each pay grade and rating, with some degree of accuracy, without the necessity of duplicating to minute details the advancement system. The success or failure of the model should be judged not by its adherence to details of how advancements are deter-

mined in reality, but by its ability to explain the dependence of the LOS distribution of advancements on various other variables of the enlisted force and, ultimately, to predict the LOS distribution of advancements accurately.

5. The Data Base Used in This Study.

For purposes of this study three sample ratings were selected by the staff of NPRDC. These ratings are the following

(i) Rating 300, called Radarman until recently when its name was changed to Operations Specialist. This is a medium sized rating in terms of its population.

(ii) Rating 1500, called Radioman. This is a high volume rating.

(iii) Rating 1800, called Personnelman. This is a low volume rating.

These three ratings were selected because they were judged to be typical representations of the more than one-hundred different ratings in the enlisted force. In addition, the total Navy, called ALLNAVY and labeled rating 0, was also studied.

The variables included in this study were advancements, testpassers and inventories. Advancements have been discussed in Section 4. Inventories refer to the total number of enlisted personnel at the beginning of the FY classified by rating, pay grade and LOS year. A subset of these is called "testpassers" and includes all personnel in that rating, pay grade and LOS year who have taken and passed a test for promotion during the FY. Another category, a subset of testpassers, is called "examined advancements" which includes those testpassers who have been promoted during the FY. Data on examined advancements have been available for this study for ratings 300, 1500 and 1800. However, there were some missing data points, ALLNAVY examined advancements were not readily available and doubts have been cast at the reliability of much of the available data as well.

For all these reasons it was finally decided not to use examined advancements. Advancements (sometimes called total advancements) includes examined advancements as well as such other categories as token advancements. In contrast to examined advancements, the data for (total) advancements had no missing points, was available for all three ratings as well as ALLNAVY and was thought to be more reliable than examined advancements. Although the testpasser data also had some missing points it was included in this study as explained in Section 8. The missing data is explained below.

In summary, the data base used in this study included advancements, testpassers and inventories for the years 1966-1974 with the following additions, exceptions and comments:

(i) Additions:

1. Inventories for FY 1975 became available toward the end of this study and were included as explained in Section 8.

2. Advancement pay grade totals for 1975 were computed from inventories, gains and losses and were also used in the study as explained in Section 8.

(ii) Exceptions:

1. Testpasser data for pay grades 8 and 9 for the years 1973 and 1974 were missing. These numbers were estimated as explained in Section 6. They were only used in a very limited way as explained in Section 8.

(iii) Comments:

1. There was some doubt cast at the reliability of the 1974 advancement data, but it was finally decided to include it in the study as explained in Section 8.

2. Advancements for 1975 were estimated (in 1973 proportions) from their pay grade totals that were in turn computed from inventories, gains and losses. They were used in a limited way as explained in Section 8.

3. Examined advancements have been studied where available, but where finally discarded as explained above.

Because the first three pay grades contain mostly non-rated, non-petty officer personnel whose promotion is accomplished largely in a decentralized fashion, it would be inappropriate to build a single model encompassing advancements in all nine pay grades. The essential part of the advancement system, at any rate, is the top six or petty officer, pay grades. For this reason, the personnel in the bottom three pay grades were summed together in a single pay grade whose label became "pay grade three". Treating the bottom three pay grades as a single one also reflects the fact that promotion from any one of them to pay grade four may be achieved by an individual within a single fiscal year. This kind of skipping of pay grades rarely occurs in the top six pay grades. Therefore, data for advancements, testpassers and inventories for each FY were placed in matrices of size 32 x 6. Appendix 1 shows one such matrix.

6. Some Basic Statistics on Advancements and Related Variables.

Before entering into details of the analysis, it will be useful to examine some of the basic facts and statistics about the data that was used. In Appendix 2 the pay grade totals are displayed for the FY's 1966-75 for the top six pay grades of ratings 300, 1500, 1800 and ALLNAVY for the variables relevant to the analysis: Inventory, Testpassers and Advancements. This table shows the relative size of each pay grade. In particular, it shows the relative size of advancement volumes in each rating and pay grade. This is important when considering the relative successes of predicting advancements in various pay grades and ratings. In such a case, an approach that is more successful in a more populous pay grade is the more favorable choice for planning purposes.

The tables in Appendix 2 require some supplementary explanation. The advancements and testpassers are understood to be "into" the pay grades indicated. Inventories for this reason are those in the pay grade <u>one lower</u> than indicated, since advancements and testpassers come from those populations. All 1975 testpassers and the missing 1973 and 1974 testpassers in pay grades 8 and 9 were estimated to bear the same proportion to the corresponding figures in the last available year (1973 or 1972 depending on the pay grade) as analogous inventory figures do for each LOS year. The pay grade totals were then computed after rounding to the nearest integer and summing over all LOS years. It is possible that better estimates could have

been found for these missing data points, however these figures were used only in a very limited way as explained in Section 8 and more elaborate procedures were judged to be superfluous.

Appendix 3 shows the mean LOS values for all ratings, pay grades and years included in the study. They provide interesting comparisons between variables, pay grades, ratings or years. Appendix 4 contains the corresponding standard deviations of the LOS distributions.

The relative trends of volume and mean LOS of advancements over the years 1966 to 1975 are given in Appendix 5. While in a few cases (e.g. pay grade 5 of rating 300)the original hypothesis that high volume of advancements and low mean LOS go together seems to be valid, the majority of cases are inconclusive.

In an attempt to grasp the relationship between volume and mean LOS of advancements, the latter is plotted against the former in the graphs displayed in Appendix 6. A few of these graphs (see e.g. the case of pay grade 7 of rating 1500) display the conjectured relationship between mean LOS and volume of advancements while others seem to confirm this with minor reservations (as in the case of pay grade 4 of rating 1500). The greater majority of cases, however, present a rather confused picture of the relationship between mean LOS and volume. A few cases actually show a relationship directly contradictory to the conjecture (see e.g. pay grade 4 of rating 1800).

The conclusion from these graphs then must be that, while they may provide some insight into the relationship between volume and mean LOS, they certainly do not offer much guidance toward expressing that relationship in formal mathematical terms.

7. The LOS Distribution of Advancements.

Since the mean LOS values of advancements exhibit little regularity when viewed as a function of volume, it was decided to examine the entire LOS distribution of advancements. Appendix 7 shows the probability mass function of the LOS distribution of the number of advancements pooled over the nine years 1966-74. These distributions are smoother curves than the individual distributions for single years. In order to provide some element of comparison and reduce the number of graphs needed, each graph contains the distributions for two pay grades of the same rating. The six pay grades are paired off as follows: 4 and 7, 5 and 8, 6 and 9. This was done to avoid plotting two distributions that are too close to each other on the same graph. Closer examination and comparisons reveal the following:

(i) Each pay grade has a rather characteristic LOS distribution that changes only slightly from one rating to the next.

(ii) Pay grades 4 and 5 possess LOS distributions that are highly skewed to the right with the mode being at LOS year 2 and 3 resp. regardless of the rating.

(iii) Pay grade 6 has a somewhat skewed LOS distribution to the right with the mode at LOS year 5, 6, 7, 8 or 9 depending on the rating.

(iv) Pay grade 7 has a LOS distribution that is just barely skewed to the right. It is an almost triangular distribution with range approximately between LOS years 7 and 21.

(v) Pay grade 8 has an almost symmetric distribution whose range extends between LOS years 11 and 25.

(vi) Pay grade 9 has a distribution that appears to be slightly skewed to the right, has a range between LOS years 12 and 30 and may be bimodal.

Clearly, these distributions could be studied in more detail and trends over years could be discerned if individual LOS distributions were plotted and examined. However, the above information will suffice for the purposes of this study.

8. Regression of Advancements on Inventories, Testpassers and Volume of Advancements.

Although the mean LOS of advancements showed no obvious relationship to volume of advancements, it appeared possible that a more complex relationship might exist between volume of advancements and the LOS distribution of advancements. Indeed, some initial investigation showed that when the advancement data in individual LOS cells were plotted against volume a somewhat clearer picture emerged than before. It was also apparent, however, that there were other factors present whose influence confused the relationship between the LOS distribution of advancements and its volume. On intuitive grounds, it seemed reasonable to expect that the advancement resources, i.e. a population from which advances are drawn, should exert a strong influence on the shape of the LOS distribution of advancements. It seemed plausible, indeed, that older (or younger) advancement resources should, by and large, produce older (or younger) advancements. The problem was then to find a population that was a suitable surrogate for advancement resources and for which data was readily available. Two such populations offered themselves: testpassers and inventories. Testpassers seemed like an excellent surrogate for advancement resources because of their close association with examined advancements which make up most of the (total) advancements. Inventories seemed too "all encompassing" to provide much information about advancement. On the other hand, data for inventories are available

more readily and earlier in the FY than testpasser data.

After some initial trials a full scale stepwise multiple regression analysis was conducted on the number of advancements (ADV.) in each LOS cell of each of the six pay grades and four ratings. The predictor variables included in the regression analysis were:

(i) number of testpassers in the same LOS cell (T.P.);

(ii) volume of advancements in the pay grade (VOL.);

(iii) inventories in the same LOS cell (INV.).

Mathematically, the regression model was

$$ADV. = \alpha + \beta\ (T.P.) + \gamma\ (VOL.) + \delta\ (INV.)$$

except that for each case the order of the predictor variables depend on the selection made by the stepwise regression analysis.

The data used in this analysis was from the following FY's:

(i) All advancement data: FY 1966-74. Although some doubt has been cast at the reliability of the 1974 advancement figures, it was finally decided to include them in the data base for the regression analysis. The reason for this is explained below.

(ii) Testpasser data for pay grades 4-7: FY 1966-74.

(iii) Testpasser data for pay grades 8-9: FY 1966-72. (1973-74 data missing).

(iv) All inventory data: FY 1966-74.

The purpose of this regression analysis was to determine the order of relative importance of the three predictor variables listed above, in each of the regression models for an LOS year, pay grade and rating. In order to cut down the sheer volume of unimportant information, only those LOS years were considered which contain more than two percent of the total

volume of advancements in the pay grade during 1973 (last year for which reliable advancement data was available). Appendix 8 shows the results of the stepwise regression analysis. Each page in this table contains information about one of the six pay grades of one of the four ratings, in four parts:

I. Order of predictor variables in stepwise regressions:

This part shows, for each LOS year given, the order of relative importance of the three variables and the percent of total volume of advancements in that LOS year during 1973. Although each LOS year containing more than 2% of the total volume was analysed, only those containing more than 3% are shown in Appendix 8 in order to display each pay grade on a single page.

II. F-Values testing 'significance' of predictor variables:

This part gives information on whether the inclusion of each predictor variable in the regression model is improving the fit as judged by the reduction achieved in the (residual) sum of squares. Column two, entitled 'FIRST VAR' gives the F-values that test the significance of the fit of the one-dimension regression model based on the first predictor variable. Column three, entitled 'ADD SEC VAR', gives F-values that test the significance of the improvement in the fit provided by the inclusion of the second predictor variable. Column four, entitled 'FIRST 2 VARS', provides F-values testing the significance of the fit of the two-dimensional regression model based on the first two predictor variables. Columns five and six give simila information on the third predictor variable as columns three and four did on the second predictor variable.

III. Corresponding degrees of freedom:

This part simply registers the two degrees of freedom associated with each of the above F-values.

IV. Some typical percentage points of the F-distribution with the above degrees of freedom:

The 90th, 95th and 99th percentage points are given for easy comparison with the F-values in part II.

An example is provided to illustrate the information available in Appendix 8. Examine the case of rating = 0, pay grade = 6, LOS year = 9. Part I. shows that the order of relative importance of predictor variables is: VOL., INV., T.P. Parts II., III. and IV. indicate that the fit provided by the one-dimensional regression model based on the first variable (VOL.) is highly significant, since $437.02 >> 13.70$. The addition of the second variable (INV.) in the regression model is hardly justified, since the appropriate F-value (2.04) is not significant even at the 90 percent level. However, addition of the third variable (T.P.) improves the fit significantly at the 90 percent level. It is also evident that both the two and three-dimensional models provide highly significant fits. If a decision had to be made on this single case alone it would have to be a one-, three- or two-dimensional regression model in that order of preference.

The formal mathematical background (see [6]) for the regression analysis carried out here is the equation

$$Y_i = \alpha + \beta x_{1i} + \gamma x_{2i} + \delta x_{3i} + \varepsilon_i, \quad i=1,\ldots,9$$

where

Y_i = ADV. in the i^{th} FY

x_{1i} = T.P. in the i^{th} FY

x_{2i} = INV. in the i^{th} FY

x_{3i} = VOL. in the i^{th} FY

and the ε_i are independent normal random variables with mean zero and common variance.

Whether advancements can be represented in such a way that variations from year to year are all "due to" dependence on T.P., INV. and VOL., except for random errors that are independent, identically distributed, normal variables (with zero mean), has not in itself been investigated. The relative success of the method, however, offers some evidence that such a representation is not entirely unreasonable.

With the above note of caution the following conclusions may be drawn from the results in Appendix 8:

(i) The addition of a third variable in the regression equation is almost never warranted. The exceptions (such as the case of rating 0, pay grade 9, LOS year 19) are too few in number and involve only a small segment of advancements.

(ii) VOL. is usually selected as the first or second most important predictor variable and its inclusion in the regression equation causes significant reduction in the sum of squares at least at the 90% level. The relatively few exceptions do not warrant complicating the model especially, since

most of them occur in less populous LOS years.

(iii) Another predictor variable, either T.P. or INV., also plays a significant role in the reduction of the sum of squares. It is not clear from this analysis which of these two variables makes a more important contribution.

(iv) The regression analysis was run both with and without the 1974 advancement data. Since the F-values were, in general, higher with the 1974 data than without it (indicating a better fit to the regression model), the decision was made to keep the 1974 data in the data base.

These conclusions suggest that a regression model with two predictor variables may be adequate to explain the data and predict future advancements. It is yet to be decided, however, which of the two possible models:

$$\text{Model 1:} \quad \text{ADV.} = \alpha + \beta\ (\text{T.P.}) + \gamma\ (\text{VOL.})$$

$$\text{Model 2:} \quad \text{ADV.} = \alpha + \beta\ (\text{INV.}) + \gamma\ (\text{VOL.})$$

should be used. In order to explore this question the two above models were compared to each other in terms of their ability to reduce the sum of squares in the regression analysis. The results are shown in Appendix 9.

Each page of this appendix refers to one of the six pay grades of one of the four ratings. Each page consists of four parts:

I. F-values testing 'significance' of the predictor variables:

Columns two and three are respectively the appropriate F-values that test the significance of the fits

provided by Models 1 and 2. Column four gives the percent volume of advancements in that LOS year in 1973. This provides a comparison of the two models for each LOS year that contains more than 2% of the total volume of advancements in the pay grade.

II. Corresponding degrees of freedom:

The two degrees of freedom of the above F-values are given for each model.

III. Some percentage points of the F-distribution with above degrees of freedom:

The 90th, 95th and 99th percentage points are given for easy comparison with the F-values in part I.

IV. Percentage of volume of advancements for which two regression models are significant:

This table sums up the percent of volume figures in column four part I for those LOS years for which the model's fit is significant at each of the indicated levels.

An example is provided to illustrate the information available in Appendix 9. Examine the case of rating = 0, pay grade = 6. Part I shows for LOS year 9, e.g., that Model 2 (INV. and VOL.) has a somewhat higher F-value than Model 1 (T.P. and VOL.) does, although both fits are highly significant at the 99 percent level. Column four shows, however, that this LOS year contains only 7.51 percent of the total volume in pay grade 6. Clearly, it is important to consider all those LOS years that contain a substantial portion of the

total volume in this pay grade. Looking at other LOS years in part I shows that, for all of them, Model 2 provides a significant fit at the 90 percent level. These LOS years contain 96.68 percent of the total volume in pay grade 9 as given in column three of part IV. Model 1 provides a significant fit, at the 90 percent level, in all LOS years given in part I, except year 18. This means that Model 1 provides significant fit in LOS years that contain 93.66 percent of the total volume in pay grade 6 as given in column two part IV. Similar figures for the 95 and 99 percent levels given in part IV show that Model 2 provides a more consistently significant fit than Model 1 does for this rating and pay grade.

Both Models 1 and 2 have similar formal mathematical background to the first regression model discussed above. The same remarks about the validity of independence and normality assumptions apply here too. Accepting these assumptions as valid the following conclusions may be drawn:

(i) For ALLNAVY (rating 0) Model 2 is preferable, judged by the reduction in sum of squares.

(ii) For Personnelman (rating 1800) the situation is similar, although less decisively so.

(iii) For Operations Specialist (rating 300) and Radioman (rating 1500) the result is mixed. For some pay grades (such as 5, 6 and 7 of rating 300 and 5 and 6 of model 1500) Model 1 appears to provide a slightly better fit. However, model 2 is leading in the other cases.

Since for the sake of practicality it is almost mandatory to choose a single model for all cases, it must be concluded that Model 2 provides for a better overall fit to the advancement data. It is to be expected then that, if advancement policy and other environmental circumstances do not radically change, Model 2 should also serve as a better predictor of the LOS distribution of advancements.

In order to test this last point the data base was altered by omitting from it an entire year. Then via Models 1 and 2 advancements were "predicted" for this year and these were compared to actual advancements. In this way the predictive capabilities of Models 1 and 2 could be compared.

The thirty-one numbers predicted for each pay grade are the result of further adjustment on the numbers produced by the regression models; namely:

(i) negative predictions are replaced by zeros;

(ii) all numbers are renormalized to sum to the correct volume figure;

(iii) all numbers are rounded off to the nearest integer.

The comparison is provided in terms of four statistical measures. These are displayed in Appendix 10:

I. Weighted average of squares of multiple correlation coefficients:

This part attempts to summarize the squares of the multiple correlation coefficients (SMCC) computed for each of the thirty-one LOS years of each pay grade. More precisely,

each of the thirty-one SMCC's is multiplied by the corresponding percent of volume of advancements in that LOS year and summed over all LOS years to come up with a single value for each pay grade. These values for Models 1 and 2 are displayed for pay grades four through nine in columns two and three. They are crude overall measures of the fits provided by each model.

II. Percent errors in estimation:

This part computes the sums of absolute differences between actual and estimated numbers of advancements over all LOS years divided by the actual volume of all advancements in the pay grade, as an overall measure of the accuracy. These errors (expressed as percentages) for Models 1 and 2 are displayed for pay grades four through nine in columns two and three.

III. Actual mean LOS value and errors of its estimates:

This part shows the actual mean LOS values of total advancements for pay grades four through nine in column two. In columns three and four the differences between the actual and estimated mean LOS values via Models 1 and 2 respectively, are displayed.

IV. Actual standard deviation of LOS distribution and errors of its estimates:

This part shows the standard deviations of the actual LOS distributions for pay grades four through nine in column two. Columns three and four show the differences between the above quantities and their estimates via Models 1 and 2 respec-

tively.

An example is provided to illustrate the information available in these tables. Examine the case of rating = 0, year = 1973, pay grade = 8. Part I shows values 0.6928 and 0.8350 in columns two and three, for Models 1 and 2, respectively. This suggests that Model 2 provides a better fit to the data over all LOS years in this pay grade and rating. Part II shows percent errors of 56.76 and 17.65 percent for Models 1 and 2. This suggests that the better fit indicated by Part I pays off in the predictions for 1973. Although better fit of the data does not guarantee a better prediction for any particular year, that is the case here when predictions are compared in terms of percent error. Part III shows that the actual mean LOS in this case is 17.21 years, while Model 1 underestimated this figure by 0.65 years and Model 2 overestimated it by 0.18 years. Part IV shows that the actual standard deviation in this case is 3.15 years, while both Models 1 and 2 underestimated it by 0.48 and 0.22 years, respectively.

FY 1972, FY 1973 and FY 1974 were each selected for advancements to be "predicted". In evaluating the results shown in Appendix 10 the following points may be made:

(i) Neither model shows overwhelming superiority over the other. This supports the use of Model 2 because of its practicality.

(ii) In terms of the weighted average of the SMCC's, Model 2 shows, in general, a better fit than Model 1. This,

of course, is in agreement with the findings in Appendix 9 in terms of the F-values. The preference of Model is especially obvious for ALLNAVY (rating 0).

(iii) In terms of percent error, mean LOS values, and standard deviations, Model 2 does quite well, even in cases when Model 1 does better. For example, "predicting" for the FY 1972, rating 1800, pay grade 6, Model 1 estimates the mean LOS value (10.30 years) more accurately than Model 2. However, even the larger error (-0.48) of Model 2 is less than 5%.

In section 6 it was explained how the missing testpasser data for FY 1973 and 1974 in pay grades 8 and 9 were estimated. Because these numbers are estimates only, they were always left out from the data base that was used in the regression analysis. These figures were only used when "predicting" the 1973 and 1974 advancements through Model 1. Similarly, advancements for 1975 that were estimated from pay grade totals were used in place of the actual 1975 figures (not available at that time) when comparing them to the predicted advancements. The results are similar to those reported for the FY's 1972, 1973 and 1974 and are not shown here.

In Appendix 11 the actual and estimated number of advancements via Model 2 are displayed side by side for FY 1973 for all six pay grades and four ratings. In addition, the actual and estimated mean LOS values and corresponding standard deviations are also given. This table is provided simply as a means of displaying a sample result of the regres-

sion model (Model 2) that was judged to be the best overall predictor from the results in Appendix 10.

Predictions have been made for FY 1975 also, using the pay grade totals that were available at that time as the variable VOL. in the regression equations. The results were then checked against the "actual" figures. Since, however, these "actual" figures were only a renormalization of the 1973 LOS distribution with the new 1975 volume figures, the results are not shown here. They were, at any rate, comparable to the results shown in Appendix 11.

9. The Relationship Between Mean LOS and Volume of Advancements.

Using the model for advancements described above, it becomes feasible to reexamine the conjecture that a higher volume of advancements "results" in a younger LOS distribution of advancees. Earlier, when attempting to verify this conjecture from the data directly, the result was a confused picture. This was so because the volume of advancements and other factors such as inventories were also changing as several years' data were compared. Using Model 2, on the other hand, advancements can be predicted with varying levels of volume within the range observed during 1966-75, while keeping the inventories at fixed levels.

In Appendix 12 the mean LOS values of advancements are plotted against volume using Model 2. The inventory is held constant for each curve, at one of the historical levels from FY 1966-1975. Since the ten curves make the graph much too crowded, only one case (pay grade 8 of rating 0) is shown in Appendix 12.

In order to provide more coherent graphs for all twenty-four (six pay grades of four ratings) cases, three curves were selected for each case. The three curves each represent one of three historical inventory distributions:

(i) The inventory distribution for FY 1975;

(ii) The inventory distribution for the year that produces (from the 1966-75 period) the highest mean LOS values of advancements at most volume levels; i.e., the "highest" of the ten curves;

(iii) The inventory distribution for the year that produces (from the 1966-75 period) the lowest mean LOS values of advancements at most volume levels; i.e., the "lowest" of the ten curves.

These three curves are shown for each of the twenty-four cases in Appendix 13.

Careful examination of these graphs reveals that there are basically two types of curves:

a. mean LOS decreases with volume,

b. mean LOS increases with volume.

The first type confirms and the second type negates the original conjecture. The apparent difference between these two types of curves seems to be the relationship between the level of inventory and, the range of volume of advancements applicable to that particular pay grade and rating. In pay grade 4 of any of the four ratings, all curves are decreasing with volume, regardless of the level of inventory. The situation is similar in other pay grades that are much too populous compared to the volume of advancement. In some other pay grades, such as pay grade 8 of rating 0, some of the curves decrease, others increase with volume. The table below shows for all twenty-four cases what the situation is:

Pay Grade / Rating	4	5	6	7	8	9
0	All decrease	All decrease	Both types	All decrease	Both types	Both types
300	All decrease	All decrease	All decrease	All decrease	All decrease	Unclear
1500	All decrease	All decrease	All decrease	All decrease	All decrease	Both types
1800	All decrease	Both types	Both types	Both types	Both types	Unclear

The case of pay grade 8, rating 0, shown in Appendix 12, may be examined in more detail. The curves representing the inventory levels of the FY's 1966, 1967 and 1968 are definitely decreasing, while those of the FY's 1969, 1970, 1971, 1972 and 1973 are definitely increasing. The curves representing the inventories of the FY's 1974 and 1975 show a mixed behavior: initially decreasing, then increasing. A possible explanation for these curves is the following. In the FY's 1966, 1967, 1968 as well as in 1974 and 1975, the inventory mean LOS values were quite high in this pay grade (see actual figures in Appendix 3). Therefore, when advancements are relatively few in numbers (low volume), the advancement mean LOS reflects the high inventory mean LOS. As the advancement volume increases, however, more and more of them must come from the lower LOS years, thereby forcing the advancement mean LOS to decrease. The FY's 1969-73 show a reverse tendency. In these years the

inventory mean LOS values were relatively low (see Appendix 3) and when the advancements were few the advancement mean LOS reflects these low values. As the advancement volume increases the advancement mean LOS is forced up, since the "excess" advancement must come, in this case, from the higher LOS years. Similar explanations may be offered for the other cases where both types of curves appear.

Two cases, namely pay grade 9 of ratings 300 and 1800, have some curves that are less regular than the others. The reason for this probably lies in the fact that these are the two least populous (total inventory less than 250 in each case in any FY) cases among the twenty-four studied and are statistically unstable.

Further examination of these curves in continuing and it appears that more interpretation of the volume dependent behavior of the advancement LOS distribution is possible. These will be presented in a second report.

10. Conclusions and Future Efforts.

Various regression models were investigated for the purpose of predicting the LOS distribution of advanced personnel of the Navy Enlisted Force. Based on the success of these predictions as well as considerations of practicality, the regression model using the inventory LOS distribution and the volume of advancements in a pay grade was judged to be the best overall predictor.

Using this regression model it was possible to confirm partially a conjectured relationship between the LOS distribution and the volume of advancements, namely, that a higher volume of advancements "produces" a younger LOS distributions of advanced personnel. It was also possible to gain more insight and discover the limits of validity of this relationship. In pay grade 4 and elsewhere, it appears to apply at all times, probably because the inventory is more than adequate to advance any reasonable volume of personnel. In some other pay grades (such as pay grade 8 of ALLNAVY), the relationship holds when the inventory LOS distribution is mainly in the high LOS years, since then only larger volume will force advancements to come from the lower LOS years. If the inventory distribution is mainly in the low LOS years, the larger volume must force advancements to come from higher LOS years. In this case larger volume will cause the advancement LOS distribution to move toward the higher LOS years, in contradiction to the original expectation.

This result was realizable through a model only. The data did not reflect this information directly because along with volume many other factors also changed from one FY to the next.

The dependence of the advancement mean LOS on volume is an interesting aspect of this problem and will be further investigated in detail. It may be desirable to find a precise criterion in terms of the inventory distribution to separate the decreasing type mean LOS functions from the increasing type.

More importantly, it is desirable to build an analytic model that would closely resemble Model 2 and, therefore, the actual advancement LOS distribution. Such an analytic model would, by necessity, have to depend on fewer parameters than Model 2 which estimates three coefficients for each of thrity-one LOS years and then uses the entire LOS distribution of inventory, in addition to the volume of advancements to predict future advancements. An analytic model would have to reduce the number of parameters to no more than half a dozen and use only a few statistical measures of the inventory LOS distribution, in addition to volume of advancements. The continuing research effort will concentrate on this area.

Another problem that may be investigated in the future is the feasibility of performing all thirty-one regression analyses of a pay grade simultaneously with the additional constraint that the total volume be a prescribed value. In

a theoretical sense this would be the "correct" way to perform the regression analyses reported in section 8. It is anticipated, however, that the simultaneous regression of thirty-one variables with added constraint is a mathematically difficult one and even if successful it would not improve the accuracy of the predicted LOS distributions a great deal.

APPENDIX 1

NUMBER OF ADVANCEMENTS FOR ALLNAVY IN FY 1973

LOS	*E4*	*E5*	*E6*	*E7*	*E8*	*E9*
1	57873	14706	234	0	3	0
2	10120	26394	4667	8	0	2
3	2210	22963	15632	14	1	0
4	595	6762	9263	182	4	1
5	51	671	2180	1107	4	0
6	21	682	1013	887	4	0
7	22	753	1006	735	7	0
8	12	257	881	622	6	0
9	3	148	517	530	161	0
10	0	54	280	441	166	0
11	2	36	192	482	237	10
12	3	28	199	442	316	46
13	0	14	92	339	399	122
14	2	18	57	236	376	149
15	0	7	34	178	427	189
16	0	11	26	192	376	208
17	1	9	53	234	451	279
18	0	7	56	213	442	297
19	0	5	24	113	228	192
20	0	2	11	51	118	98
21	0	2	4	27	72	75
22	0	0	0	7	21	30
23	0	0	5	5	11	19
24	1	0	1	1	6	15
25	0	0	0	2	4	16
26	0	0	0	2	4	7
27	0	0	0	1	7	13
28	0	0	0	1	3	10
29	0	0	0	2	5	6
30	0	0	0	0	1	2
31	0	0	0	0	2	4
32	70916	73529	36427	7054	3862	1790

APPENDIX 2

PAY GRADE TOTALS

RATING=0 *PAY GRADE*=4

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	262698	79259	83437
1967	311687	98382	94973
1968	307519	124551	132009
1969	276562	143158	117456
1970	270868	93362	91609
1971	236343	84277	68228
1972	200646	65124	64623
1973	191667	47935	73529
1974	187516	44454	48684
1975	189436	49770	56931

RATING=0 *PAY GRADE*=5

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	116730	30425	36919
1967	129890	53009	40929
1968	130538	43389	65745
1969	145988	68026	55398
1970	152032	48555	47804
1971	134360	50589	37022
1972	118311	48367	35441
1973	105458	38216	36427
1974	97573	39180	22152
1975	92044	36701	31657

RATING=0 *PAY GRADE*=6

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	93718	16801	17433
1967	97333	29996	18572
1968	100210	28684	26583
1969	115665	24409	19060
1970	121435	22370	11887
1971	100392	22039	9362
1972	94368	22869	10729
1973	88328	22294	7054
1974	85059	36576	7659
1975	80577	24420	11714

PAY GRADE TOTALS.

RATING=0 PAY GRADE=7

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	70148	12170	6619
1967	73491	22466	9498
1968	75861	19497	11911
1969	82283	17933	9104
1970	84156	18601	5225
1971	81507	24499	5389
1972	77693	29287	5551
1973	75515	29789	3862
1974	71913	19867	5214
1975	66370	25997	4745

RATING=0 PAY GRADE=8

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	37492	9049	1327
1967	38616	6467	2504
1968	38096	5723	2838
1969	41086	8553	3249
1970	42407	10218	2028
1971	40555	12627	2241
1972	38864	13286	2800
1973	36863	12452	1790
1974	35244	11461	1829
1975	33740	10761	2052

RATING=0 PAY GRADE=9

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	7871	2439	394
1967	8139	2075	981
1968	8287	2214	812
1969	8572	3617	916
1970	9561	3751	634
1971	9311	3521	791
1972	9018	3579	1027
1973	9183	3685	708
1974	9001	3505	735
1975	8800	3352	783

PAY GRADE TOTALS.

RATING=300 PAY GRADE=4

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	2276	2069	2906
1967	2333	2397	3098
1968	2042	3466	3573
1969	2112	3952	3869
1970	1677	2481	2139
1971	2300	2253	1936
1972	2631	1874	1985
1973	2274	1386	2017
1974	1810	1172	1281
1975	1903	1390	1412

RATING=300 PAY GRADE=5

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	3024	803	938
1967	3695	1196	1122
1968	4020	781	1316
1969	4322	1735	1537
1970	4664	1499	1517
1971	3851	1511	1349
1972	3003	1292	934
1973	2524	742	688
1974	2123	725	422
1975	1891	930	532

RATING=300 PAY GRADE=6

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	2619	255	158
1967	2204	582	432
1968	2191	470	502
1969	2206	374	394
1970	2501	277	305
1971	2145	199	165
1972	2039	156	146
1973	1589	125	138
1974	1124	195	195
1975	861	108	177

PAY GRADE TOTALS.

RATING=300 PAY GRADE=7

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	1532	255	39
1967	1552	565	143
1968	1655	535	230
1969	1723	394	140
1970	1777	442	62
1971	1845	559	96
1972	1760	523	199
1973	1310	449	98
1974	1217	286	139
1975	1115	362	84

RATING=300 PAY GRADE=8

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	705	196	29
1967	676	169	14
1968	703	139	51
1969	775	172	56
1970	791	201	14
1971	755	272	35
1972	734	245	57
1973	717	238	27
1974	717	230	33
1975	712	231	18

RATING=300 PAY GRADE=9

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	136	47	4
1967	150	46	6
1968	137	32	19
1969	128	46	20
1970	140	64	8
1971	128	44	20
1972	122	38	23
1973	128	42	7
1974	131	39	11
1975	136	39	2

PAY GRADE TOTALS.

RATING=1500 PAY GRADE=4

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	5023	3056	4758
1967	4953	3506	4418
1968	4320	4975	5207
1969	3351	5010	5045
1970	2625	3232	3570
1971	4618	3986	3115
1972	5773	3973	3983
1973	5770	2539	4760
1974	4029	1935	2183
1975	3924	1911	2775

RATING=1500 PAY GRADE=5

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	5314	1194	1978
1967	6243	2027	2137
1968	6193	1355	2382
1969	6583	2880	2676
1970	6180	1933	2007
1971	5521	2289	2176
1972	4856	2647	1736
1973	5214	1924	2238
1974	5639	1529	1160
1975	3744	1397	1205

RATING=1500 PAY GRADE=6

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	4354	721	862
1967	4575	1337	969
1968	4643	1147	1189
1969	4494	926	975
1970	4818	789	218
1971	4280	745	460
1972	4323	975	226
1973	4141	1006	188
1974	4227	1854	114
1975	4025	1422	214

PAY GRADE TOTALS.

RATING=1500 PAY GRADE=7

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	3494	599	316
1967	3791	1305	416
1968	4007	1100	504
1969	4355	1088	418
1970	4521	1170	283
1971	4047	1475	207
1972	3994	1689	185
1973	3725	1803	161
1974	3481	1188	193
1975	3089	1475	115

RATING=1500 PAY GRADE=8

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	1875	527	45
1967	1995	420	162
1968	2011	381	120
1969	2118	602	184
1970	2178	702	78
1971	2158	822	19
1972	2149	893	65
1973	2042	813	92
1974	1908	720	105
1975	1741	606	95

RATING=1500 PAY GRADE=9

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	469	154	26
1967	439	93	83
1968	444	119	28
1969	419	186	38
1970	497	247	17
1971	486	204	14
1972	411	169	33
1973	359	138	31
1974	368	129	14
1975	398	149	30

PAY GRADE TOTALS.

RATING=1800 PAY GRADE=4

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	524	2075	907
1967	990	2132	1795
1968	476	1993	1783
1969	419	3234	1599
1970	970	2874	1650
1971	1101	1399	1124
1972	1193	1107	1182
1973	1590	1006	1639
1974	1596	1152	1187
1975	1894	1221	1616

RATING=1800 PAY GRADE=5

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	1944	603	273
1967	1835	821	547
1968	2162	467	999
1969	2020	1203	614
1970	1960	920	696
1971	1867	884	819
1972	1386	923	534
1973	1578	924	900
1974	1715	876	511
1975	1805	1350	843

RATING=1800 PAY GRADE=6

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	1651	410	222
1967	1572	719	225
1968	1740	683	635
1969	1838	506	237
1970	1824	533	217
1971	1630	588	255
1972	1796	425	338
1973	1512	336	216
1974	1556	709	68
1975	1572	394	246

PAY GRADE TOTALS.

RATING=1800 PAY GRADE=7

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	1393	292	78
1967	1420	556	168
1968	1400	495	214
1969	1722	445	183
1970	1681	435	120
1971	1654	592	266
1972	1526	545	200
1973	1579	580	94
1974	1602	502	49
1975	1482	543	63

RATING=1800 PAY GRADE=8

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	744	190	54
1967	736	160	50
1968	702	129	73
1969	750	164	65
1970	791	206	31
1971	760	245	72
1972	876	241	108
1973	898	251	66
1974	872	231	27
1975	782	199	37

RATING=1800 PAY GRADE=9

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	159	40	23
1967	179	50	27
1968	174	43	27
1969	183	75	27
1970	189	77	6
1971	171	51	28
1972	171	64	33
1973	222	86	30
1974	237	84	16
1975	223	75	20

APPENDIX 3

MEAN LOS VALUES

RATING=0 *PAY GRADE*=4

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	2.34	2.37	2.55
1967	2.10	2.15	2.29
1968	2.25	2.29	2.26
1969	2.16	2.15	2.13
1970	1.95	2.19	2.06
1971	2.09	2.38	2.22
1972	2.21	2.70	2.42
1973	2.19	2.73	2.47
1974	2.00	2.83	2.33
1975	2.10	2.58	2.48

RATING=0 *PAY GRADE*=5

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	5.06	4.63	5.07
1967	4.56	4.48	4.73
1968	4.06	3.41	3.72
1969	3.68	3.36	3.34
1970	3.60	3.35	3.35
1971	3.51	3.35	3.33
1972	3.73	3.64	3.66
1973	3.93	3.97	3.91
1974	3.93	4.42	3.96
1975	4.01	3.95	3.91

RATING=0 *PAY GRADE*=6

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	9.09	8.93	9.96
1967	8.76	9.50	9.79
1968	8.27	9.36	9.55
1969	6.82	9.01	9.13
1970	6.35	8.51	8.89
1971	6.68	8.41	9.12
1972	6.83	8.61	8.80
1973	7.06	8.48	9.51
1974	7.47	9.06	8.93
1975	7.73	8.73	9.51

MEAN LOS VALUES.

RATING=0 PAY GRADE=7

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	13.75	12.56	14.56
1967	13.55	12.88	13.93
1968	13.30	13.11	13.84
1969	12.69	13.25	13.88
1970	12.70	13.18	14.09
1971	13.07	13.30	14.33
1972	13.45	13.49	14.82
1973	13.64	13.58	15.00
1974	14.18	13.75	15.13
1975	14.32	13.95	15.00

RATING=0 PAY GRADE=8

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	18.16	16.97	18.68
1967	18.24	17.32	17.31
1968	17.96	17.21	18.58
1969	17.31	17.08	17.71
1970	17.22	16.61	17.43
1971	17.44	16.40	17.11
1972	17.63	16.93	17.24
1973	17.89	17.18	17.21
1974	18.29	17.61	17.64
1975	18.44	17.79	17.21

RATING=0 PAY GRADE=9

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	20.70	19.93	20.48
1967	21.08	20.05	20.41
1968	20.69	19.45	20.44
1969	20.88	19.73	20.04
1970	20.75	19.33	19.82
1971	20.70	19.15	19.52
1972	20.51	19.38	19.99
1973	20.24	19.16	20.04
1974	20.42	19.47	19.62
1975	20.55	19.72	20.04

MEAN LOS VALUES.

RATING=300 *PAY GRADE*=4

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	2.43	2.03	2.34
1967	2.37	2.03	2.14
1968	2.45	2.23	2.18
1969	2.21	1.94	1.89
1970	2.13	1.95	2.01
1971	2.17	1.99	2.21
1972	2.40	2.39	2.50
1973	2.47	2.35	2.53
1974	2.06	2.30	2.22
1975	2.07	2.02	2.53

RATING=300 *PAY GRADE*=5

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	4.19	3.92	4.29
1967	3.99	3.96	4.04
1968	3.58	2.94	3.15
1969	3.49	3.15	3.07
1970	3.29	3.08	3.13
1971	3.43	3.13	3.11
1972	3.61	3.29	3.28
1973	3.81	3.28	3.53
1974	3.80	3.96	3.64
1975	3.74	2.77	3.53

RATING=300 *PAY GRADE*=6

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	8.21	7.65	8.37
1967	7.55	8.22	8.53
1968	7.16	8.76	8.67
1969	6.22	8.98	8.92
1970	5.48	8.70	8.81
1971	5.25	8.59	9.08
1972	5.20	9.04	8.71
1973	5.51	8.31	9.15
1974	6.22	8.06	8.76
1975	6.24	8.31	9.28

MEAN LOS VALUES.

RATING=300 PAY GRADE=7

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	11.48	10.90	11.95
1967	12.07	11.80	13.37
1968	11.97	11.72	12.55
1969	11.87	12.11	13.02
1970	12.15	12.28	14.03
1971	12.55	12.86	13.71
1972	13.11	13.15	14.31
1973	13.82	13.55	14.79
1974	14.23	13.77	15.02
1975	13.86	13.63	14.79

RATING=300 PAY GRADE=8

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	16.04	14.61	17.69
1967	16.61	15.08	14.79
1968	16.67	15.59	16.59
1969	16.13	16.49	15.75
1970	16.36	15.84	17.14
1971	16.83	15.89	16.97
1972	17.18	16.84	16.19
1973	17.44	17.13	16.85
1974	17.85	17.20	17.36
1975	17.86	17.14	16.67

RATING=300 PAY GRADE=9

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	18.66	17.91	19.25
1967	19.02	17.65	17.67
1968	19.39	18.75	18.21
1969	19.23	17.22	19.55
1970	18.44	17.55	17.00
1971	19.04	17.50	17.70
1972	19.41	17.63	17.83
1973	18.90	16.88	17.14
1974	19.51	17.28	18.45
1975	19.76	18.36	18.00

MEAN LOS VALUES.

RATING=1500 *PAY GRADE*=4

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	2.57	2.02	2.37
1967	2.45	2.09	2.19
1968	2.49	2.21	2.15
1969	2.56	2.00	1.96
1970	2.17	1.84	1.90
1971	1.97	1.91	1.87
1972	2.32	2.35	2.24
1973	2.44	2.36	2.45
1974	2.41	2.49	2.46
1975	2.18	2.21	2.45

RATING=1500 *PAY GRADE*=5

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	4.18	4.02	4.20
1967	4.02	3.89	3.91
1968	3.68	3.08	3.40
1969	3.56	3.27	3.25
1970	3.40	3.25	3.31
1971	3.24	3.06	3.11
1972	3.34	3.13	3.19
1973	3.49	3.35	3.50
1974	3.70	3.75	3.78
1975	3.86	3.77	3.51

RATING=1500 *PAY GRADE*=6

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	7.56	7.62	8.39
1967	7.55	8.20	8.42
1968	7.11	8.31	8.44
1969	6.37	8.23	8.22
1970	5.79	7.81	10.02
1971	6.20	8.03	8.55
1972	6.10	8.23	10.10
1973	6.40	8.48	9.96
1974	6.84	9.07	10.91
1975	7.42	8.35	9.93

MEAN LOS VALUES.

RATING=1500 PAY GRADE=7

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	12.03	10.96	12.88
1967	12.10	11.36	12.32
1968	12.03	11.75	12.68
1969	11.79	12.11	12.58
1970	11.96	11.95	13.87
1971	12.66	12.40	14.58
1972	13.00	13.06	14.79
1973	13.58	13.20	15.53
1974	14.27	13.84	15.63
1975	14.85	13.99	15.57

RATING=1500 PAY GRADE=8

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	17.01	15.60	17.53
1967	17.17	15.65	15.27
1968	16.79	16.13	16.59
1969	16.22	15.74	16.47
1970	16.16	15.55	16.41
1971	16.64	15.74	15.79
1972	17.14	16.33	16.60
1973	17.61	16.93	17.09
1974	18.19	17.53	17.44
1975	18.57	17.81	17.08

RATING=1500 PAY GRADE=9

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	19.48	18.68	19.12
1967	20.08	18.67	19.14
1968	19.30	17.64	19.07
1969	19.21	17.38	18.79
1970	18.95	17.79	17.88
1971	19.20	17.87	18.29
1972	19.66	18.73	18.30
1973	19.97	18.84	19.68
1974	20.10	18.84	19.29
1975	20.05	19.05	19.73

MEAN LOS VALUES.

RATING=1800 PAY GRADE=4

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	2.95	2.35	3.12
1967	3.23	2.21	2.51
1968	3.08	2.21	2.34
1969	2.76	2.07	2.24
1970	2.47	2.11	2.23
1971	2.29	2.04	2.16
1972	2.16	2.15	2.11
1973	2.00	2.04	2.06
1974	1.76	2.11	1.94
1975	1.87	1.88	2.06

RATING=1800 PAY GRADE=5

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	5.10	4.58	6.10
1967	5.41	5.11	5.83
1968	4.44	3.66	4.45
1969	3.90	3.50	3.73
1970	3.79	3.52	3.96
1971	3.48	3.12	3.09
1972	3.54	3.29	3.53
1973	3.45	3.23	3.42
1974	3.28	3.45	3.29
1975	3.39	2.99	3.42

RATING=1800 PAY GRADE=6

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	9.72	8.97	9.92
1967	10.16	9.73	11.08
1968	9.77	10.12	10.70
1969	7.86	9.68	11.11
1970	7.56	9.37	10.05
1971	7.77	9.50	11.30
1972	6.91	9.88	10.30
1973	6.93	8.89	10.54
1974	6.82	8.87	10.60
1975	7.06	8.82	10.55

MEAN LOS VALUES.

RATING=1800 PAY GRADE=7

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	13.60	12.23	15.01
1967	13.83	12.67	14.24
1968	14.16	13.21	14.16
1969	13.59	13.66	14.50
1970	14.02	14.18	14.81
1971	14.32	13.94	15.43
1972	14.41	13.78	15.60
1973	14.22	13.87	15.70
1974	14.51	14.21	15.51
1975	15.06	14.30	15.56

RATING=1800 PAY GRADE=8

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	17.99	16.66	18.98
1967	18.24	17.69	16.68
1968	18.23	17.40	18.77
1969	17.61	17.00	18.20
1970	17.42	16.67	16.94
1971	17.70	16.98	16.82
1972	17.83	17.49	17.60
1973	18.18	17.88	17.30
1974	18.78	18.55	18.44
1975	19.40	19.05	17.35

RATING=1800 PAY GRADE=9

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	19.92	19.73	20.70
1967	20.20	19.02	20.15
1968	19.96	18.77	19.30
1969	20.55	19.84	19.44
1970	20.72	19.48	22.33
1971	20.63	19.31	20.43
1972	19.63	18.78	19.58
1973	19.56	18.81	18.77
1974	19.97	19.38	19.75
1975	20.60	19.92	19.20

APPENDIX 4

STANDARD DEVIATIONS of LOS DISTRIBUTIONS

RATING=0 *PAY GRADE*=4

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	1.66	1.90	1.62
1967	1.50	1.82	1.55
1968	1.33	1.59	1.24
1969	1.36	1.61	1.26
1970	1.27	1.92	1.14
1971	1.22	2.01	1.21
1972	1.21	3.06	1.18
1973	1.31	2.58	1.30
1974	1.31	3.09	1.36
1975	1.35	1.62	1.30

RATING=0 *PAY GRADE*=5

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	3.44	3.05	3.27
1967	3.00	3.27	3.33
1968	2.68	2.58	2.70
1969	2.15	2.24	2.11
1970	2.06	2.19	2.05
1971	2.02	2.21	1.90
1972	2.06	2.72	2.03
1973	2.06	2.86	2.12
1974	2.17	3.92	2.14
1975	2.25	2.44	2.12

RATING=0 *PAY GRADE*=6

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	4.65	3.44	4.03
1967	4.52	3.61	3.95
1968	4.51	3.73	3.79
1969	4.35	3.95	4.08
1970	4.06	3.97	4.14
1971	4.23	3.90	4.28
1972	4.18	4.05	3.99
1973	4.14	3.93	4.21
1974	4.12	4.22	4.17
1975	4.06	3.85	4.21

STANDARD DEVIATIONS OF LOS DISTRIBUTIONS.

RATING=0 PAY GRADE=7

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	4.59	3.53	4.09
1967	4.53	3.32	3.76
1968	4.49	3.25	3.52
1969	4.40	3.26	3.50
1970	4.40	3.21	3.41
1971	4.37	3.11	3.58
1972	4.32	3.24	3.36
1973	4.33	3.31	3.33
1974	4.25	3.70	3.33
1975	4.35	3.47	3.33

RATING=0 PAY GRADE=8

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	3.82	3.64	2.86
1967	4.18	3.85	3.60
1968	4.40	4.06	3.86
1969	4.46	4.00	3.87
1970	4.34	3.71	3.87
1971	4.10	3.32	3.45
1972	3.95	3.51	3.42
1973	3.78	3.40	3.15
1974	3.67	3.59	3.05
1975	3.65	3.74	3.14

RATING=0 PAY GRADE=9

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	3.23	3.25	2.79
1967	3.41	3.60	3.30
1968	3.89	3.98	3.66
1969	4.07	4.03	3.72
1970	4.30	4.08	3.92
1971	4.39	4.07	3.86
1972	4.42	4.14	3.85
1973	4.27	3.91	3.99
1974	4.09	3.85	3.56
1975	3.91	3.77	3.99

STANDARD DEVIATIONS OF LOS DISTRIBUTIONS.

RATING=300 *PAY GRADE*=4

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	1.07	1.47	1.17
1967	1.20	1.55	1.19
1968	1.02	1.24	0.96
1969	0.94	1.20	0.93
1970	0.79	1.72	0.81
1971	0.75	0.71	0.77
1972	0.72	2.59	0.71
1973	0.90	1.98	0.97
1974	0.92	2.82	0.95
1975	0.89	1.98	0.97

RATING=300 *PAY GRADE*=5

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	2.21	2.27	2.57
1967	1.94	2.58	2.65
1968	1.60	1.64	1.79
1969	1.33	1.53	1.55
1970	1.36	1.33	1.36
1971	1.29	1.36	1.24
1972	1.27	2.15	1.53
1973	1.17	1.26	1.41
1974	1.42	4.09	1.75
1975	1.53	1.28	1.42

RATING=300 *PAY GRADE*=6

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	4.70	2.60	2.69
1967	3.72	2.81	3.08
1968	3.91	3.07	3.10
1969	3.83	3.79	3.81
1970	3.35	3.89	3.84
1971	3.10	3.54	3.67
1972	2.95	5.01	3.21
1973	3.12	4.07	3.89
1974	3.29	3.81	3.56
1975	3.16	3.68	3.98

STANDARD DEVIATIONS OF LOS DISTRIBUTIONS.

RATING=300 PAY GRADE=7

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	3.91	2.68	3.30
1967	3.77	2.92	3.19
1968	3.74	2.64	2.64
1969	3.76	2.59	2.83
1970	3.86	2.82	2.89
1971	3.90	2.80	2.89
1972	3.87	2.78	2.77
1973	3.92	2.84	2.78
1974	3.95	3.67	2.53
1975	4.28	2.90	2.86

RATING=300 PAY GRADE=8

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	3.48	2.87	2.76
1967	3.53	2.82	3.14
1968	3.54	2.67	3.06
1969	3.61	3.08	2.32
1970	3.54	3.09	2.17
1971	3.26	2.63	3.38
1972	3.25	3.24	2.19
1973	3.23	3.25	3.57
1974	3.25	2.84	2.21
1975	3.11	2.75	3.38

RATING=300 PAY GRADE=9

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	2.61	2.51	2.59
1967	2.72	2.66	2.43
1968	3.15	3.42	2.61
1969	3.52	2.68	3.40
1970	3.34	2.96	1.66
1971	3.17	2.48	2.19
1972	3.63	2.41	1.86
1973	3.45	2.33	1.64
1974	3.50	2.54	1.97
1975	3.34	2.70	1.00

STANDARD DEVIATIONS OF LOS DISTRIBUTIONS.

RATING=1500 PAY GRADE=4

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	1.11	1.40	1.19
1967	1.10	1.58	1.14
1968	1.04	1.32	0.99
1969	1.10	1.30	1.01
1970	0.95	1.22	0.90
1971	0.71	1.61	0.76
1972	0.68	2.22	0.79
1973	0.91	1.78	1.04
1974	1.00	2.64	1.04
1975	1.05	2.07	1.05

RATING=1500 PAY GRADE=5

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	1.95	2.09	2.06
1967	1.83	2.53	2.17
1968	1.63	1.61	1.94
1969	1.46	1.79	1.71
1970	1.47	1.80	1.63
1971	1.26	1.40	1.41
1972	1.16	2.07	1.43
1973	1.16	1.88	1.33
1974	1.22	3.39	1.61
1975	1.34	2.23	1.40

RATING=1500 PAY GRADE=6

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	3.37	2.55	2.69
1967	3.40	2.56	2.98
1968	3.53	2.90	2.95
1969	3.56	3.43	3.31
1970	3.21	3.21	4.21
1971	3.35	2.95	2.93
1972	3.39	3.08	3.60
1973	3.42	2.79	3.80
1974	3.46	3.66	3.74
1975	3.50	2.84	3.72

STANDARD DEVIATIONS OF LOS DISTRIBUTIONS.

RATING=1500 PAY GRADE=7

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	3.98	2.63	3.43
1967	3.82	2.58	2.87
1968	3.86	2.44	2.73
1969	3.85	2.49	2.50
1970	3.97	2.67	2.79
1971	3.84	2.73	3.29
1972	3.78	2.83	3.29
1973	3.58	2.79	2.87
1974	3.48	3.03	2.47
1975	3.39	2.68	2.99

RATING=1500 PAY GRADE=8

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	3.89	3.55	2.77
1967	3.95	3.29	3.15
1968	4.06	3.40	3.27
1969	3.94	3.28	3.27
1970	3.74	2.87	2.76
1971	3.46	2.70	2.55
1972	3.25	2.84	2.93
1973	3.12	3.05	2.50
1974	2.98	3.28	2.46
1975	2.84	3.17	2.46

RATING=1500 PAY GRADE=9

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	2.97	2.91	2.03
1967	3.21	3.69	2.73
1968	3.85	3.59	3.41
1969	3.96	3.49	3.73
1970	3.90	3.48	2.91
1971	3.61	2.96	2.86
1972	3.54	3.33	2.14
1973	3.70	3.46	3.45
1974	3.64	3.37	2.12
1975	3.33	3.33	3.49

STANDARD DEVIATIONS OF LOS DISTRIBUTIONS.

RATING=1800 *PAY GRADE*=4

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	1.59	1.76	1.67
1967	1.35	2.00	1.56
1968	1.56	1.70	1.16
1969	1.17	1.86	1.16
1970	1.19	2.18	1.12
1971	1.26	0.90	0.97
1972	1.01	3.16	1.04
1973	0.92	2.24	0.96
1974	0.88	3.15	1.07
1975	0.89	2.02	0.96

RATING=1800 *PAY GRADE*=5

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	2.58	2.34	2.83
1967	2.68	2.66	2.80
1968	2.59	2.99	2.88
1969	2.16	2.34	2.07
1970	2.17	2.19	2.77
1971	1.72	1.68	1.48
1972	1.81	2.15	2.01
1973	1.64	2.42	1.70
1974	1.46	3.91	1.53
1975	1.56	2.18	1.72

RATING=1800 *PAY GRADE*=6

YEARS	*INVENTORY*	*TESTPASSERS*	*ADVANCEMENTS*
1966	3.43	2.44	2.46
1967	3.58	3.01	3.01
1968	3.86	3.23	3.11
1969	4.26	3.54	3.85
1970	4.10	3.80	3.46
1971	4.28	3.91	3.64
1972	4.20	4.61	3.82
1973	4.13	3.97	4.08
1974	3.98	4.34	4.11
1975	3.95	3.71	4.05

STANDARD DEVIATIONS OF LOS DISTRIBUTIONS.

RATING=1800 PAY GRADE=7

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	3.74	2.97	3.76
1967	3.58	2.52	3.32
1968	3.49	2.39	2.76
1969	3.64	2.48	2.71
1970	3.63	2.72	2.34
1971	3.66	2.94	2.70
1972	3.66	3.08	2.78
1973	3.89	3.00	2.56
1974	3.97	3.38	3.25
1975	3.92	3.09	2.67

RATING=1800 PAY GRADE=8

YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	3.20	2.98	2.21
1967	3.61	2.99	2.70
1968	3.73	3.50	2.92
1969	3.88	3.17	3.02
1970	3.70	2.94	3.47
1971	3.37	2.70	2.04
1972	3.30	2.96	2.68
1973	3.23	2.98	2.50
1974	3.23	3.20	2.22
1975	3.35	3.32	2.54

RATING=1800 PAY GRADE=9

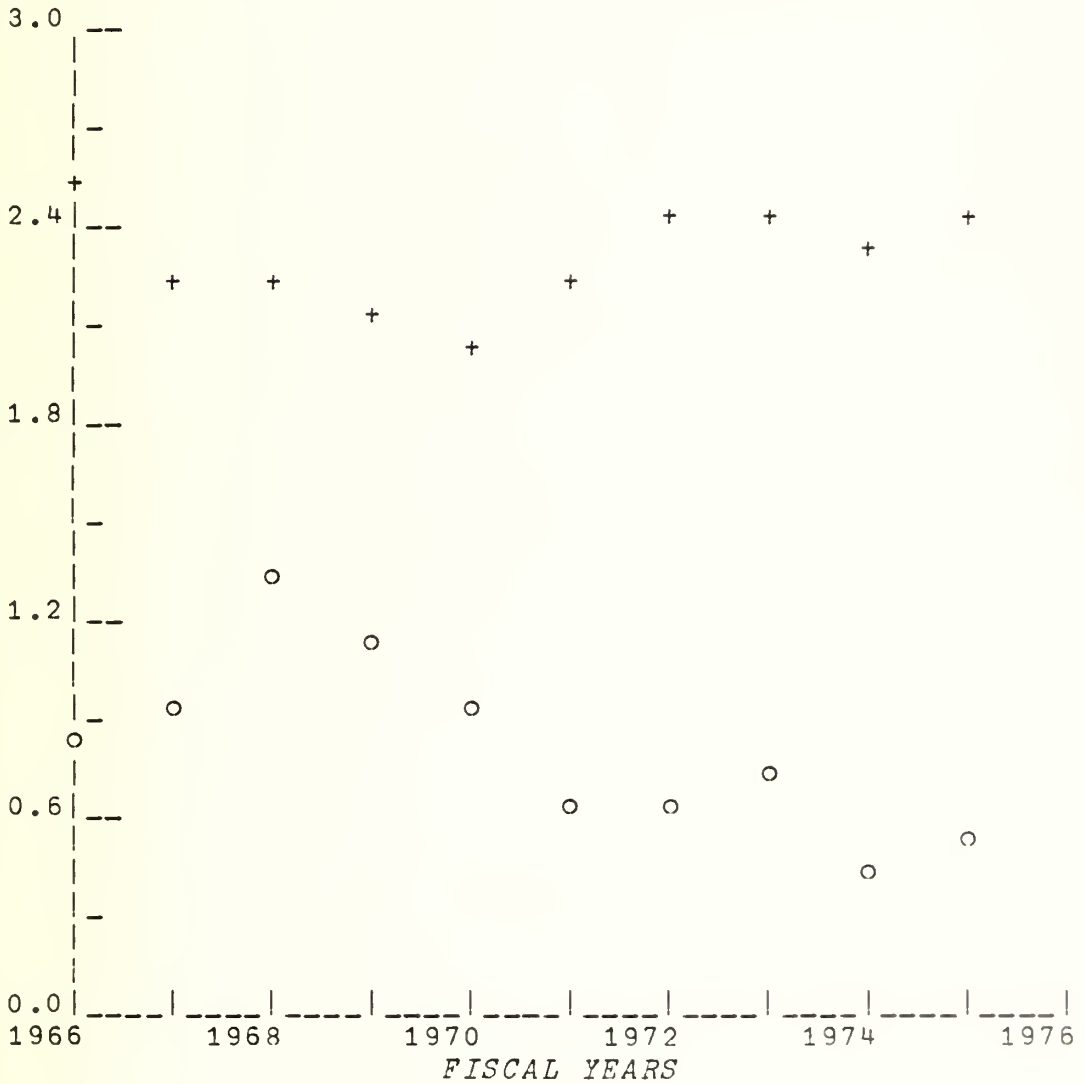
YEARS	INVENTORY	TESTPASSERS	ADVANCEMENTS
1966	2.61	2.22	2.76
1967	2.79	2.86	2.21
1968	3.13	2.99	3.02
1969	3.16	3.20	3.10
1970	3.37	3.34	3.30
1971	3.59	3.84	3.12
1972	3.55	2.88	3.36
1973	3.27	2.46	3.17
1974	3.14	2.40	3.36
1975	3.06	2.31	3.74

APPENDIX 5

VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=0 *PAY GRADE*=4

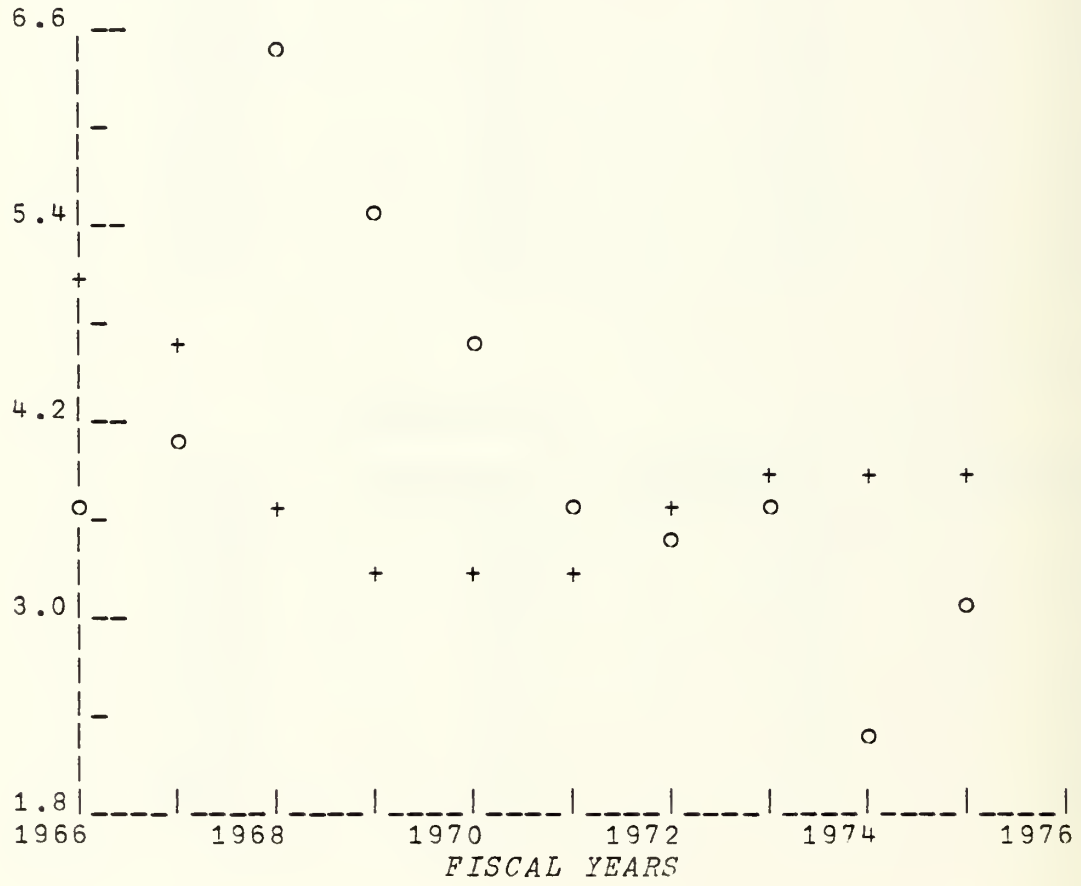
VOLUME(o) *IN UNITS OF* 100000 *AND MEAN LOS*(+) *IN YEARS*



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=0 PAY GRADE=5

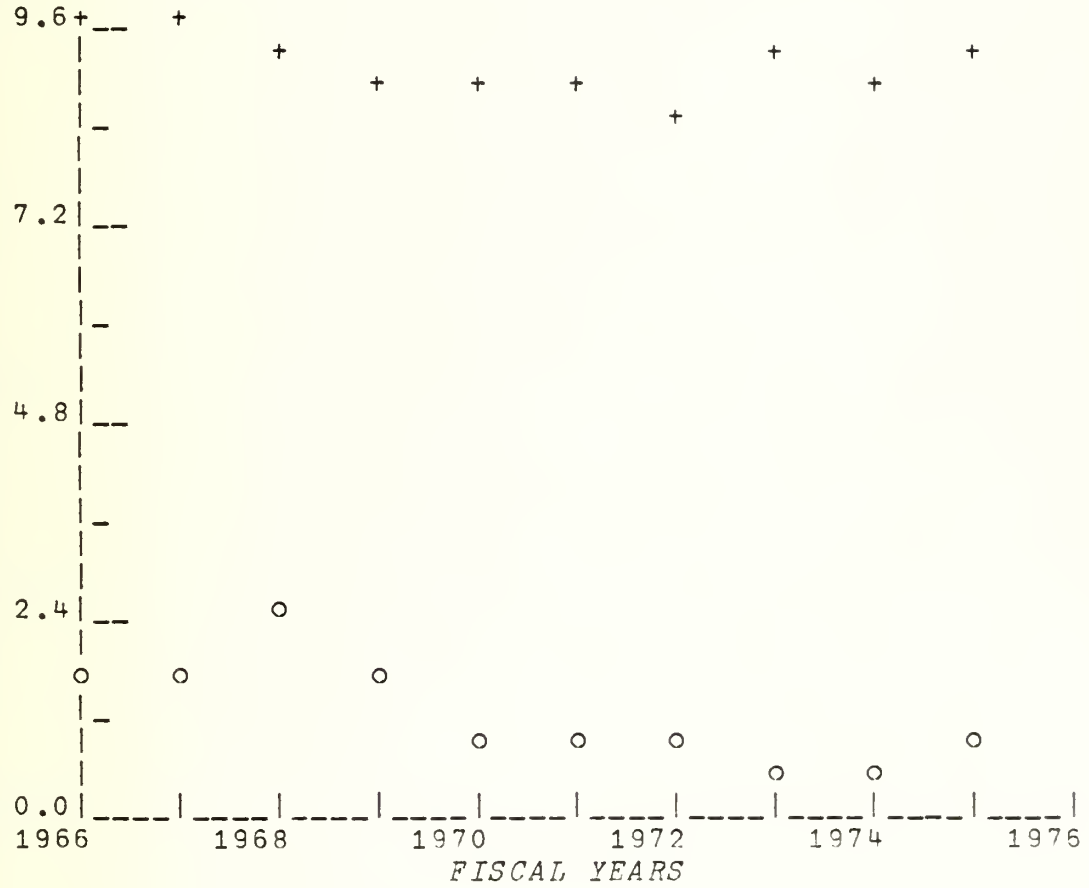
VOLUME(o) IN UNITS OF 10000 AND MEAN LOS(+) IN YEARS



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=0 PAY GRADE=6

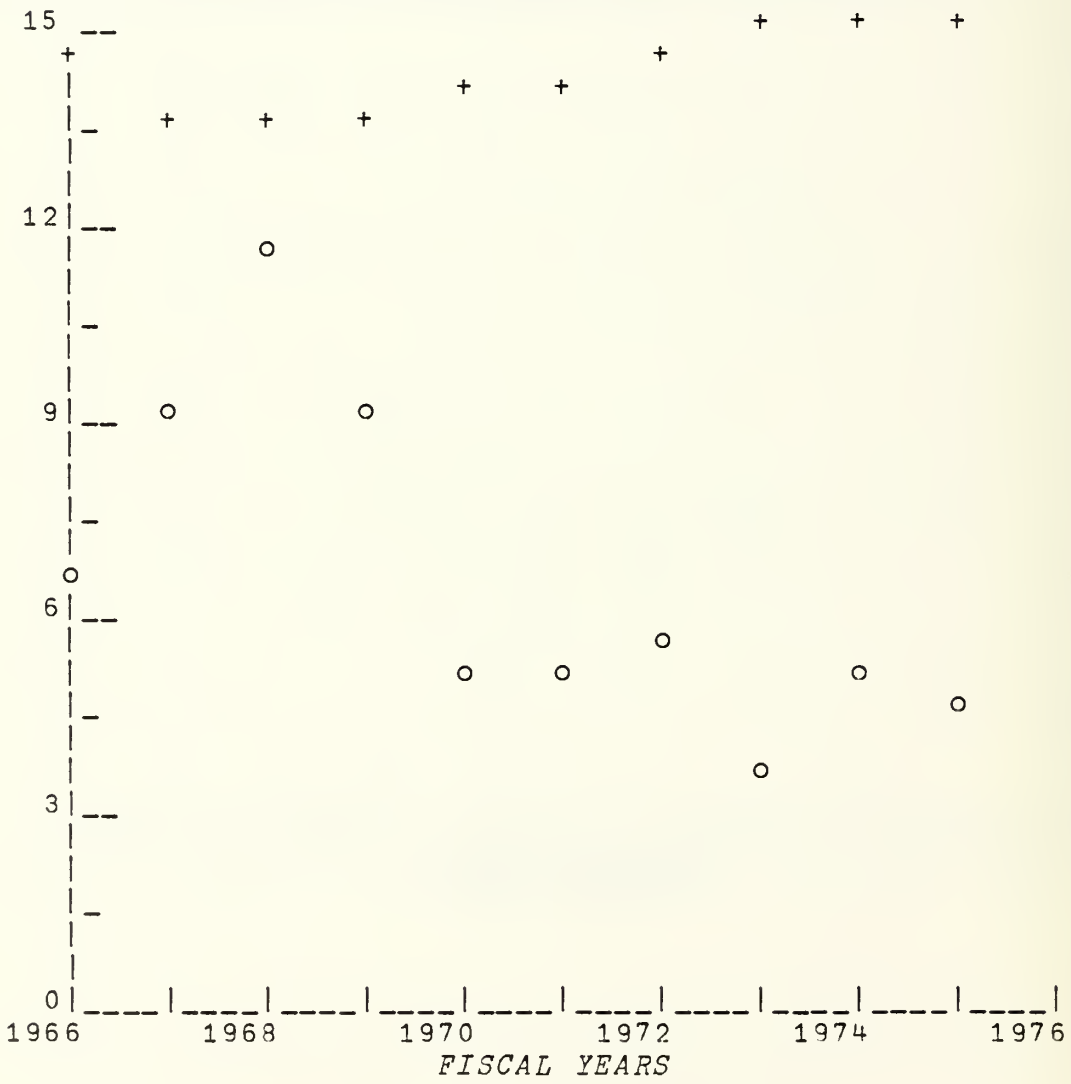
VOLUME(o) IN UNITS OF 10000 AND MEAN LOS(+) IN YEARS



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=0 PAY GRADE=7

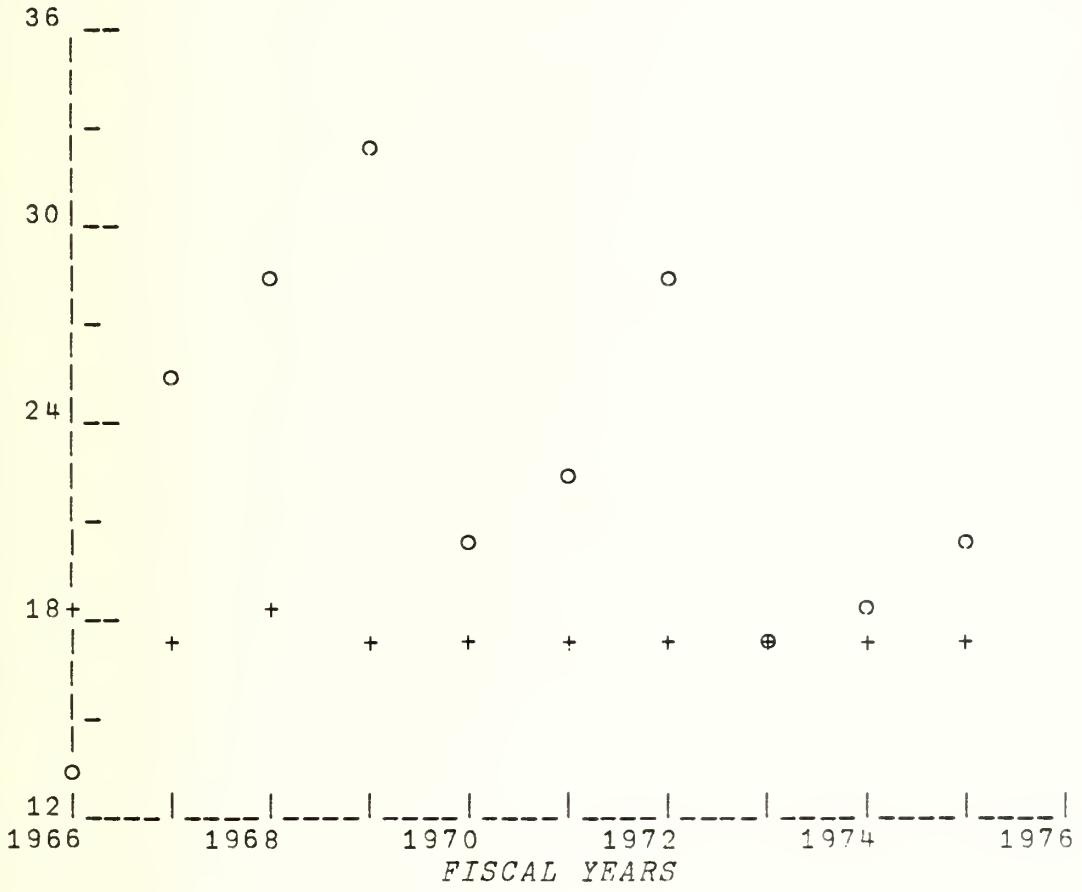
VOLUME(o) IN UNITS OF 1000 AND MEAN LOS(+) IN YEARS



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=0 PAY GRADE=8

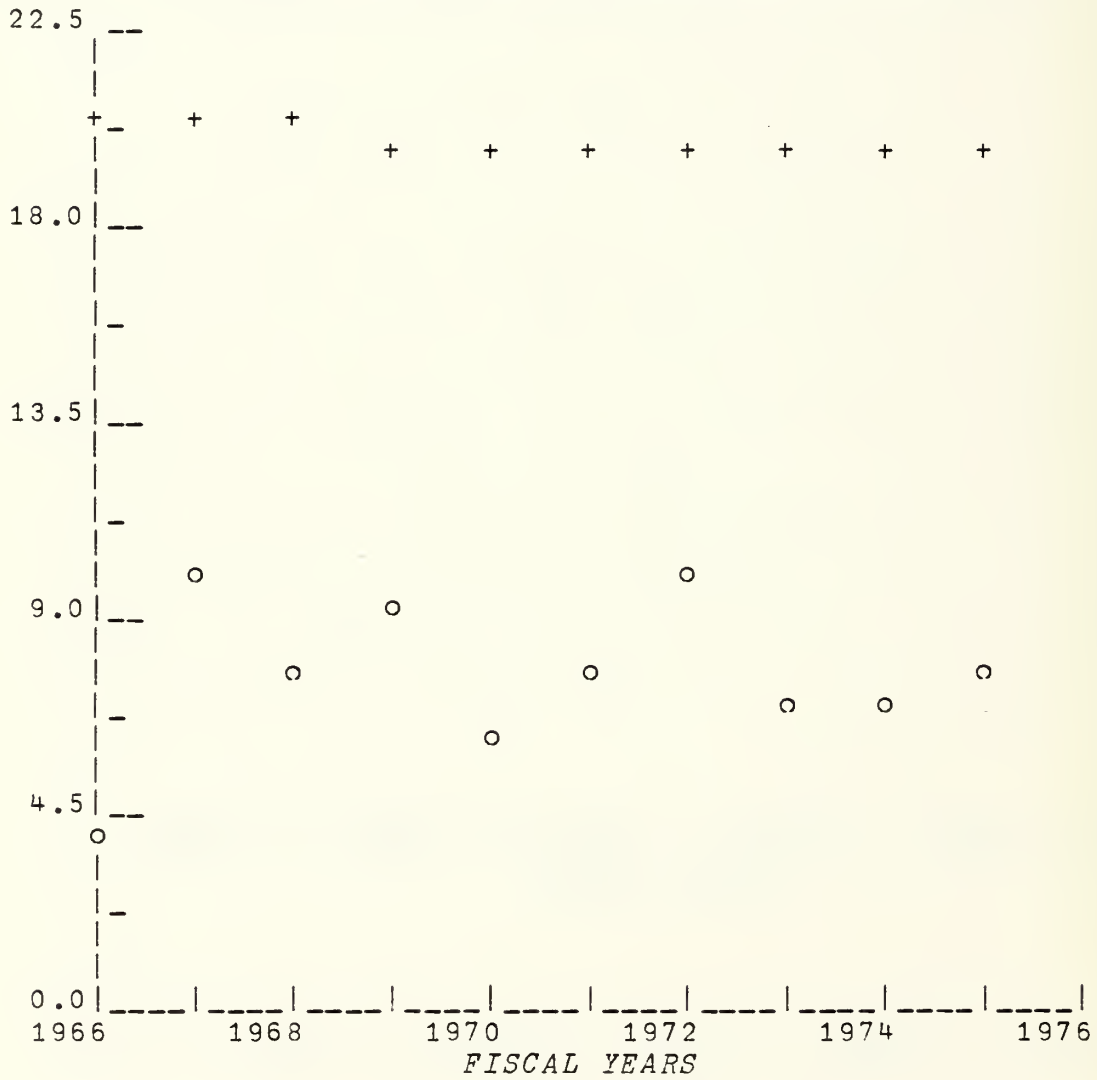
LUME(o) IN UNITS OF 100 AND MEAN LOS(+) IN YEARS



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=0 PAY GRADE=9

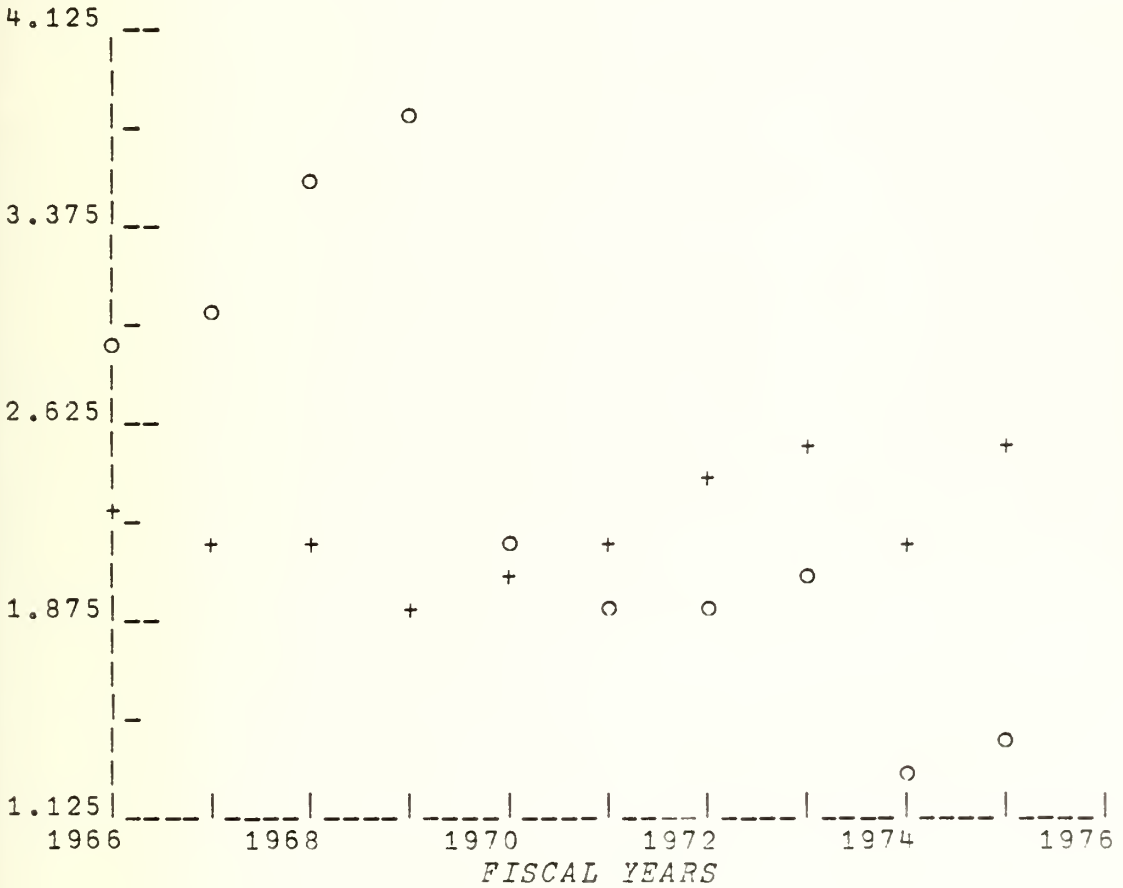
VOLUME(o) IN UNITS OF 100 AND MEAN LOS(+) IN YEARS



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=300 PAY GRADE=4

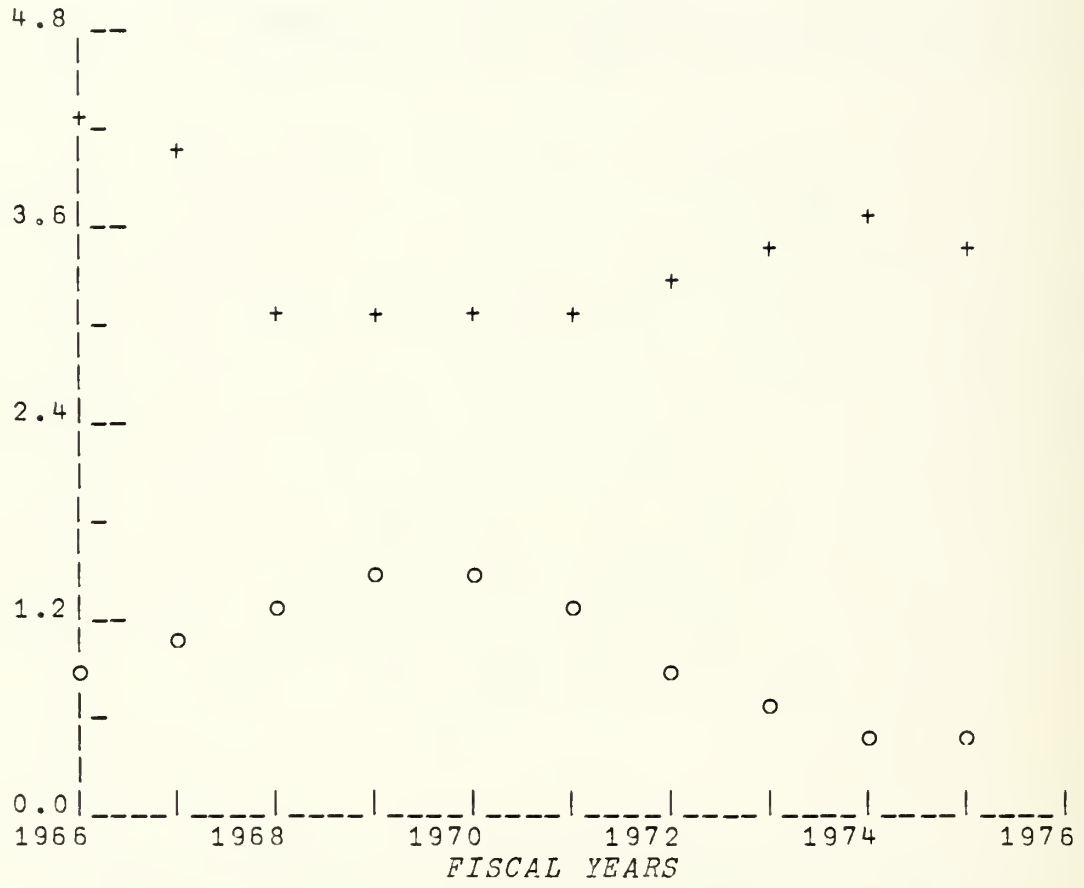
VOLUME(o) IN UNITS OF 1000 AND MEAN LOS(+) IN YEARS



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=300 PAY GRADE=5

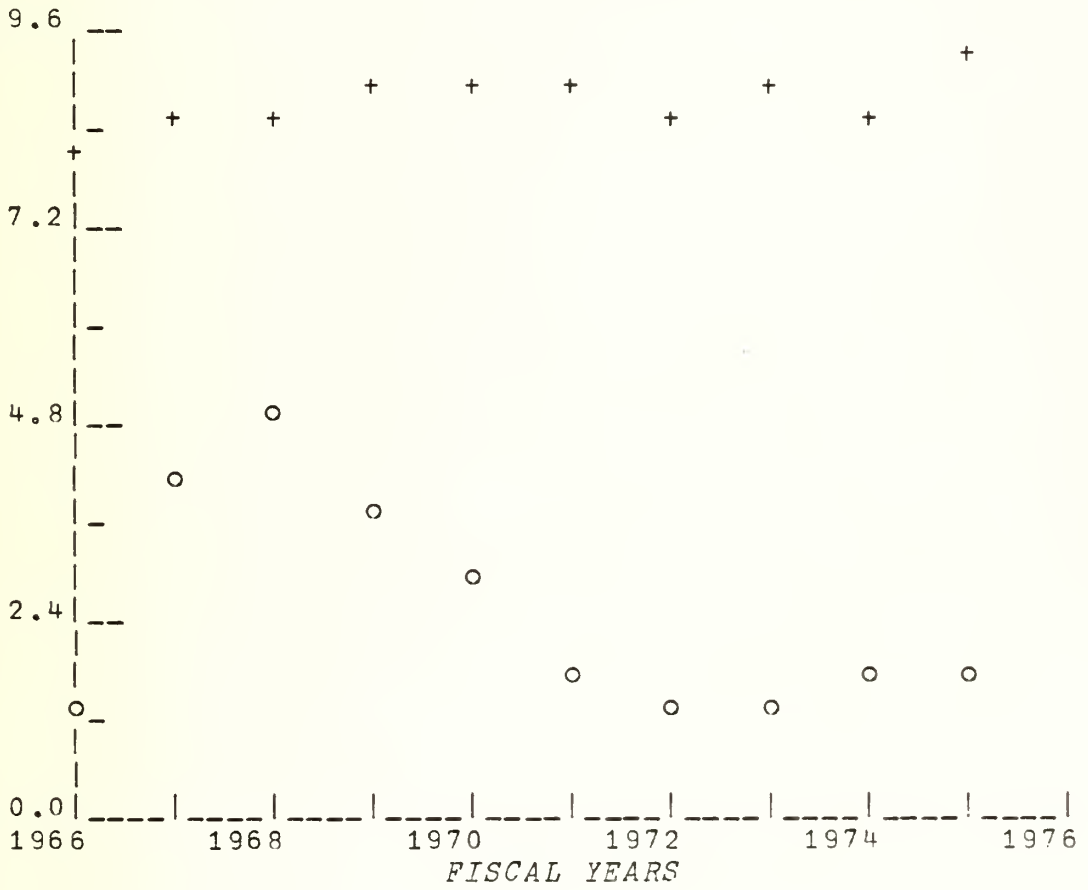
VOLUME(o) IN UNITS OF 1000 AND MEAN LOS(+) IN YEARS



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=300 PAY GRADE=6

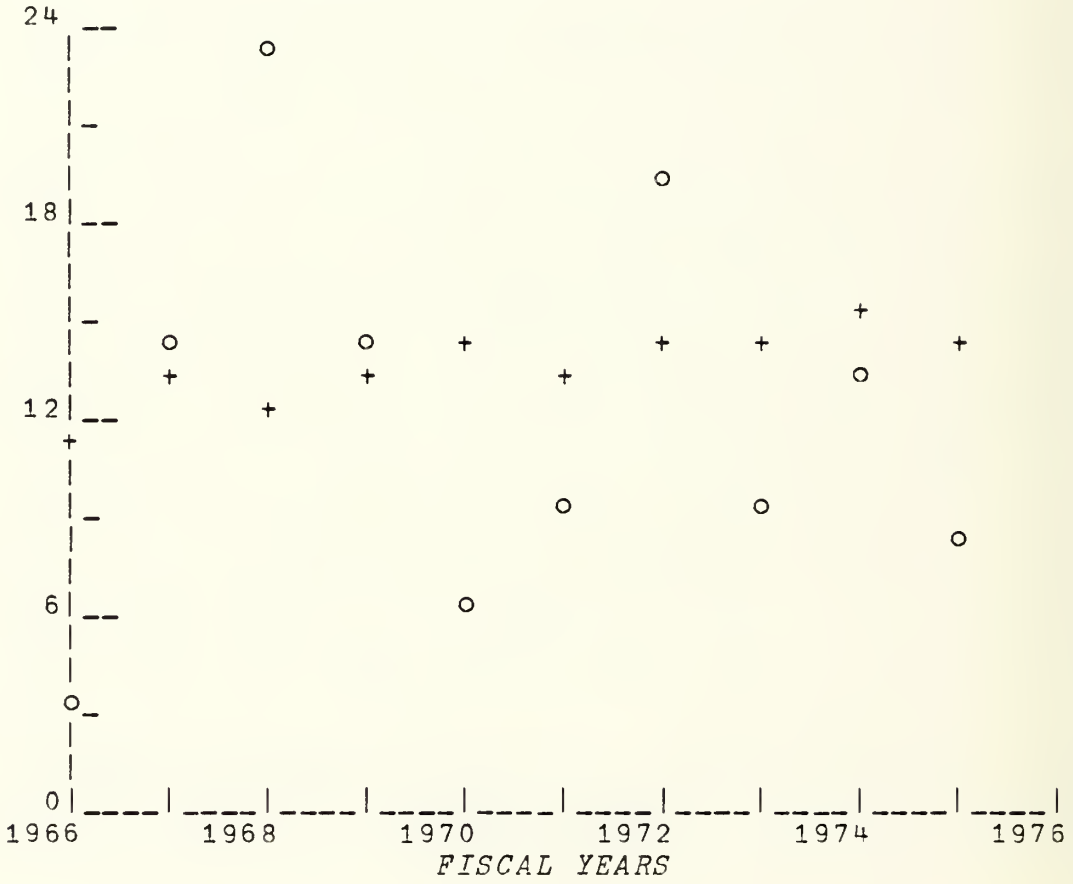
VOLUME(o) IN UNITS OF 100 AND MEAN LOS(+) IN YEARS



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS

RTG=300 PAY GRADE=7

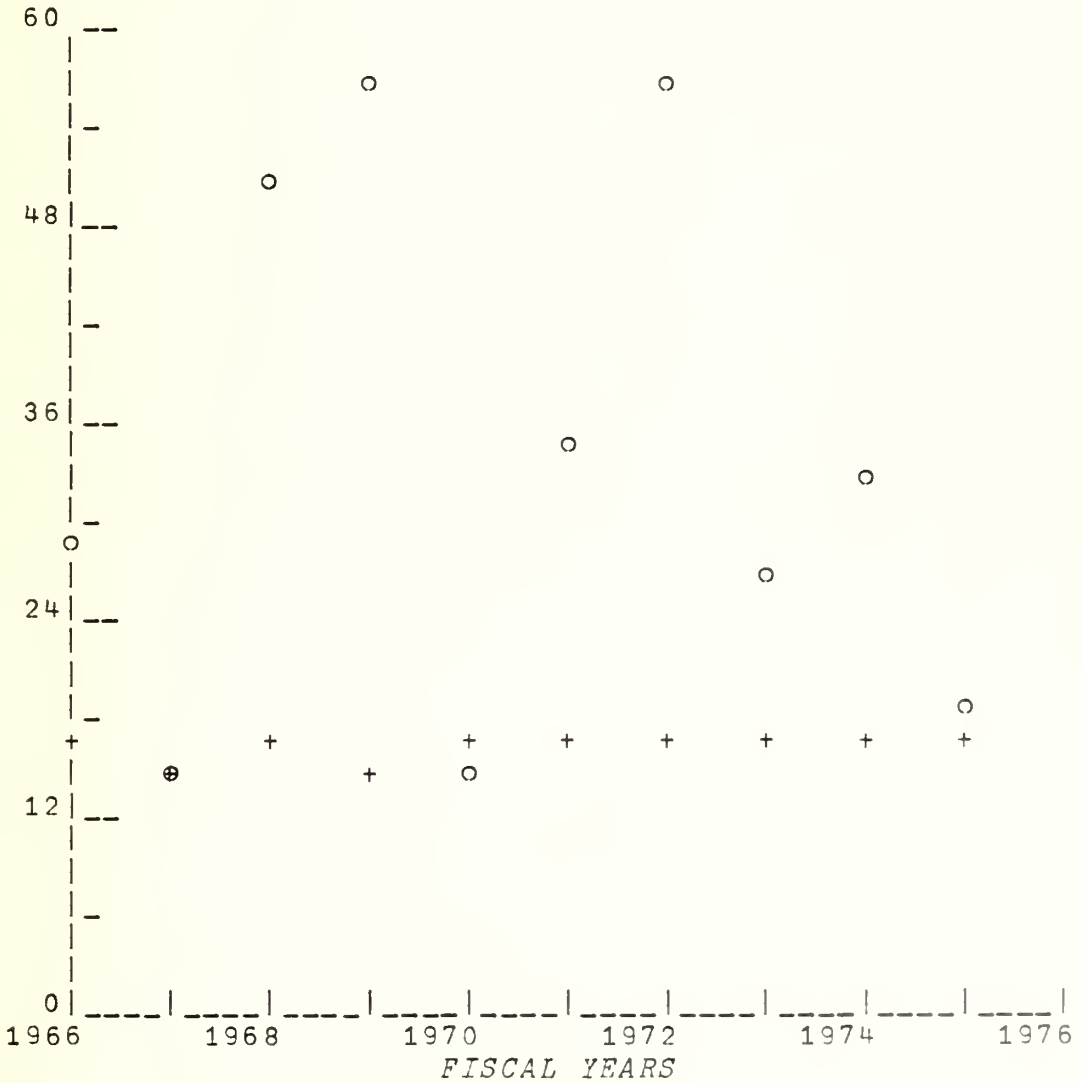
VOLUME(o) IN UNITS OF 10 AND MEAN LOS(+) IN YEARS



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=300 PAY GRADE=8

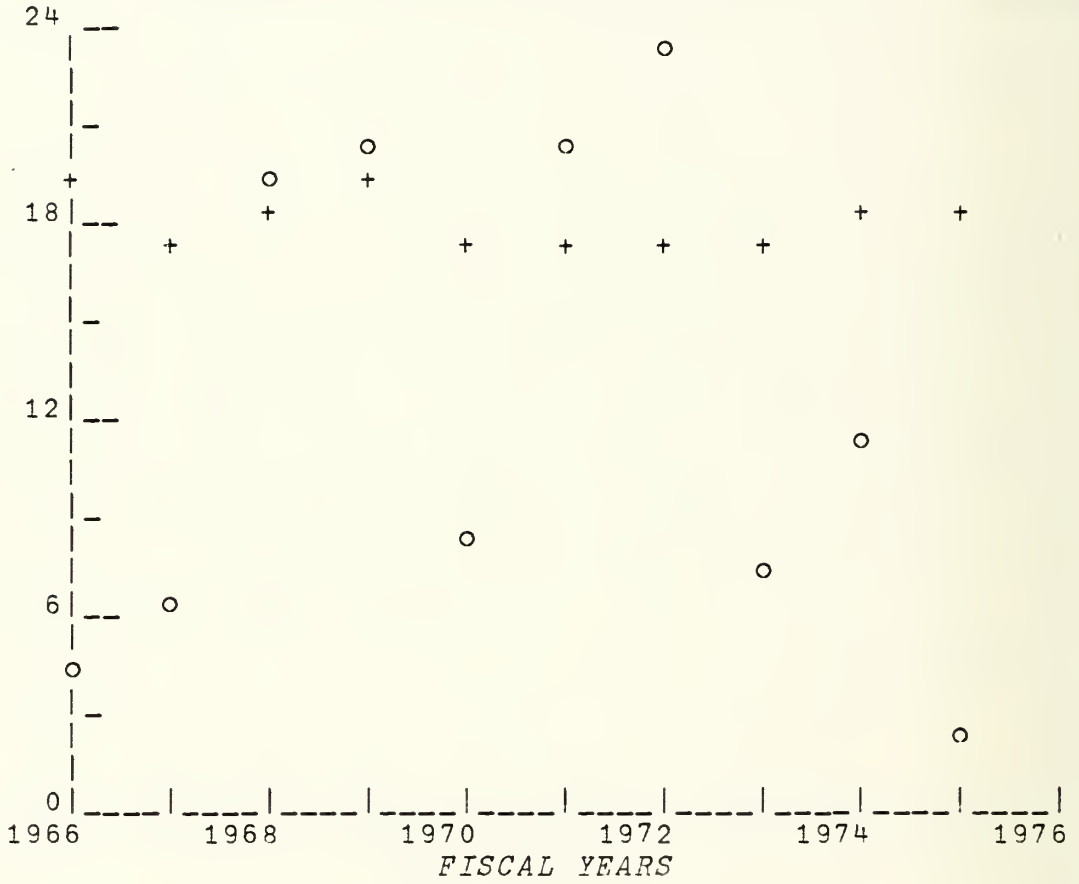
VOLUME(o) IN UNITS OF 1 AND MEAN LOS(+) IN YEARS



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEA

RTG=300 PAY GRADE=9

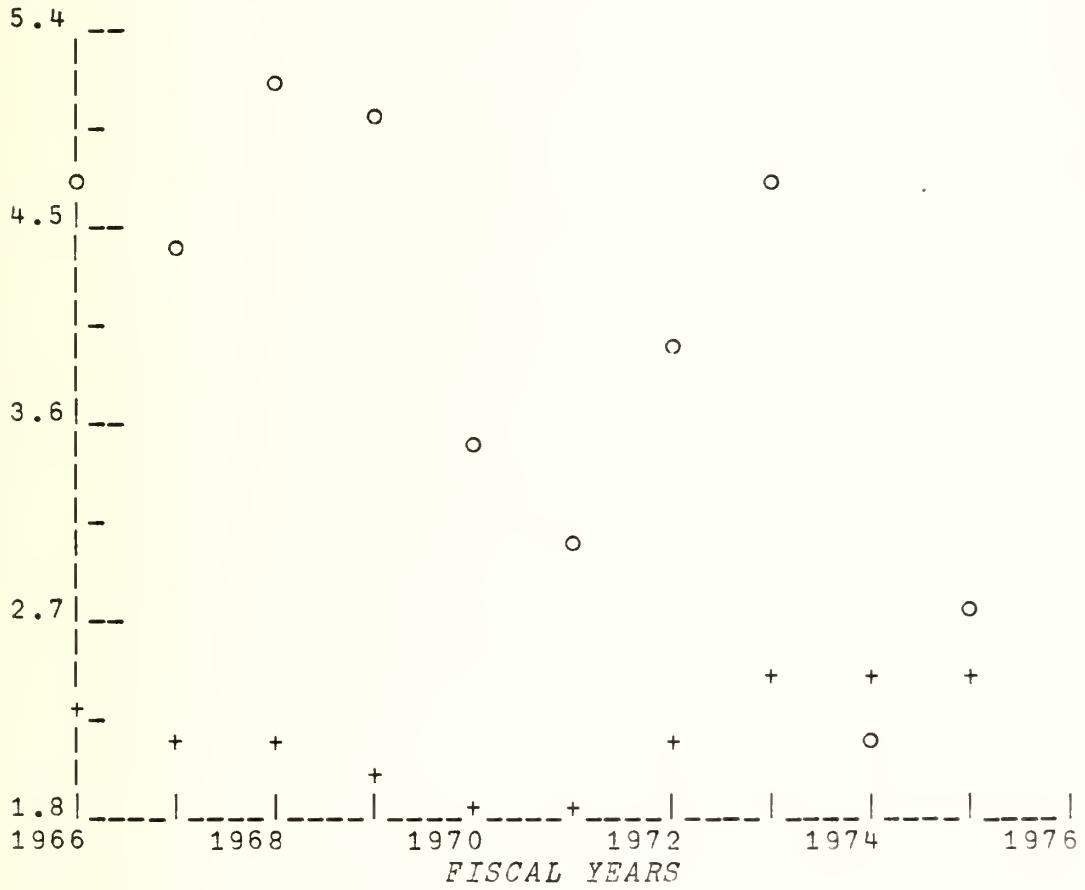
VOLUME(o) IN UNITS OF 1 AND MEAN LOS(+) IN YEARS



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=1500 PAY GRADE=4

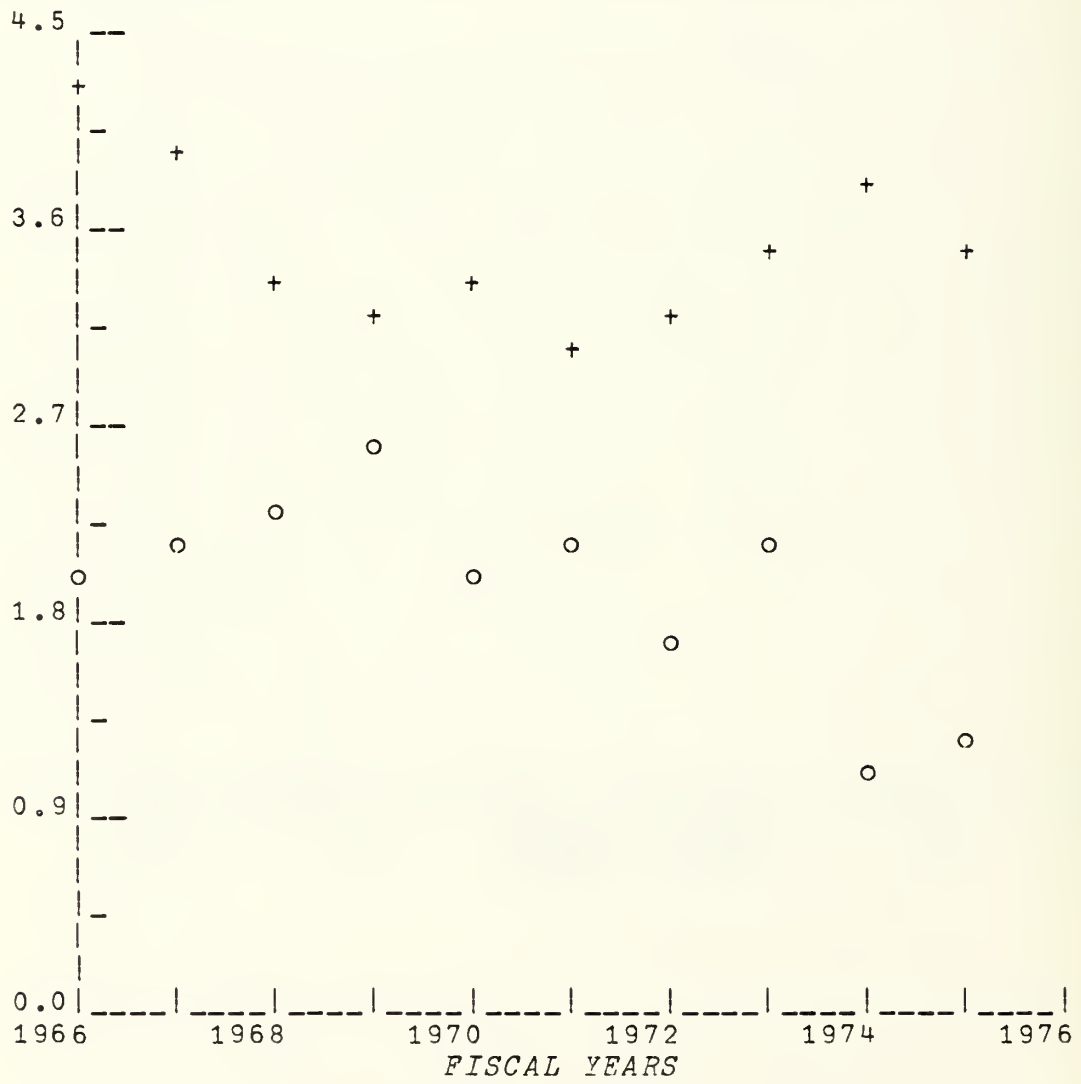
OLUME(o) IN UNITS OF 1000 AND MEAN LOS(+) IN YEARS



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=1500 PAY GRADE=5

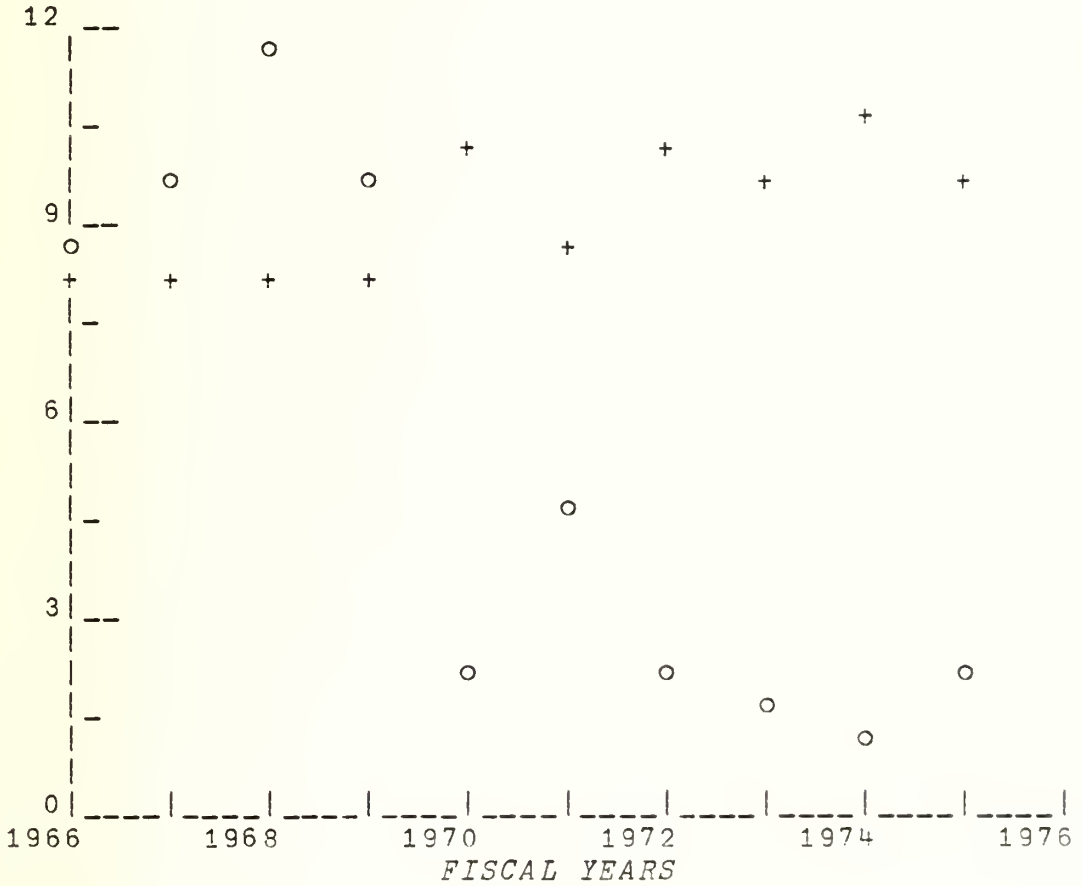
VOLUME(o) IN UNITS OF 1000 AND MEAN LOS(+) IN YEARS



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=1500 PAY GRADE=6

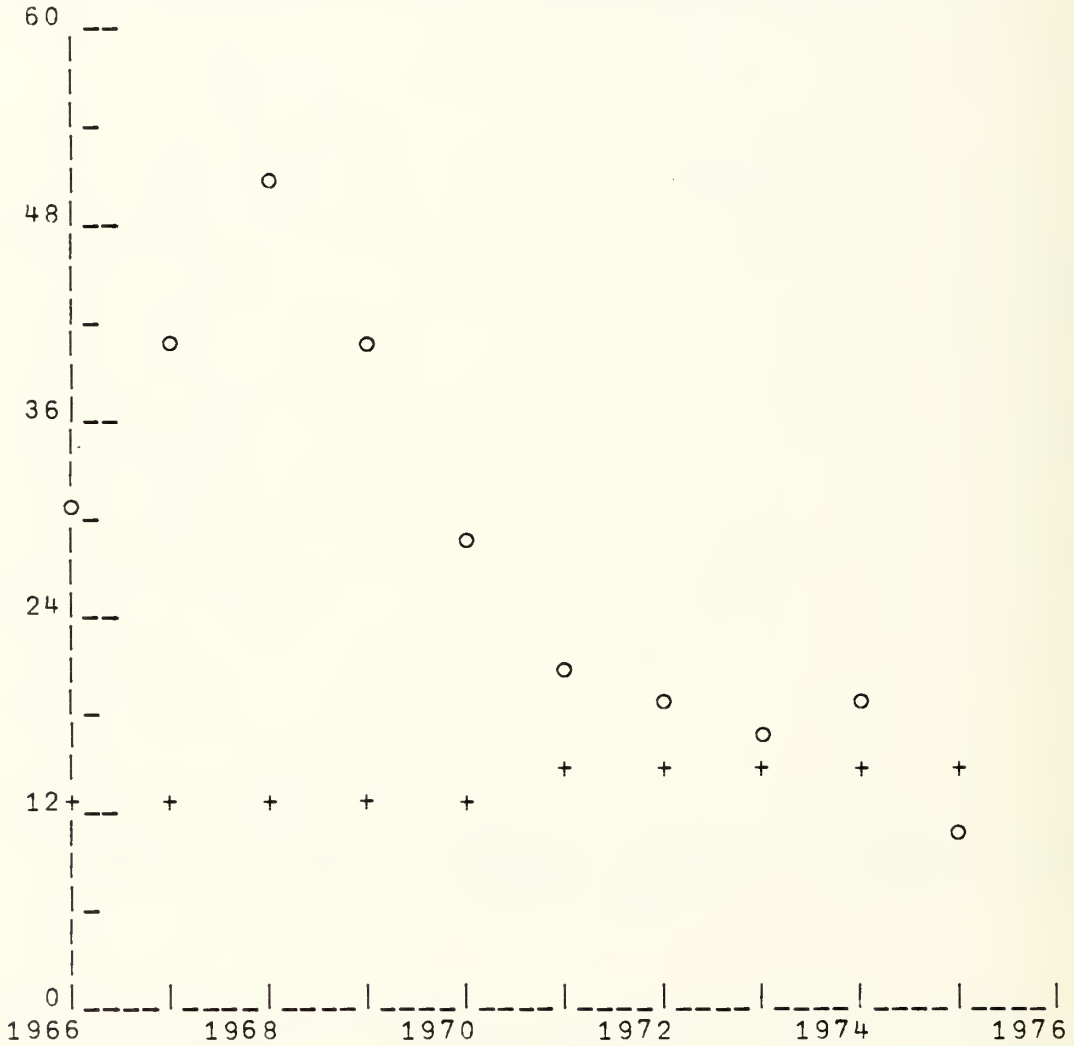
VOLUME(o) IN UNITS OF 100 AND MEAN LOS(+) IN YEARS



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=1500 PAY GRADE=7

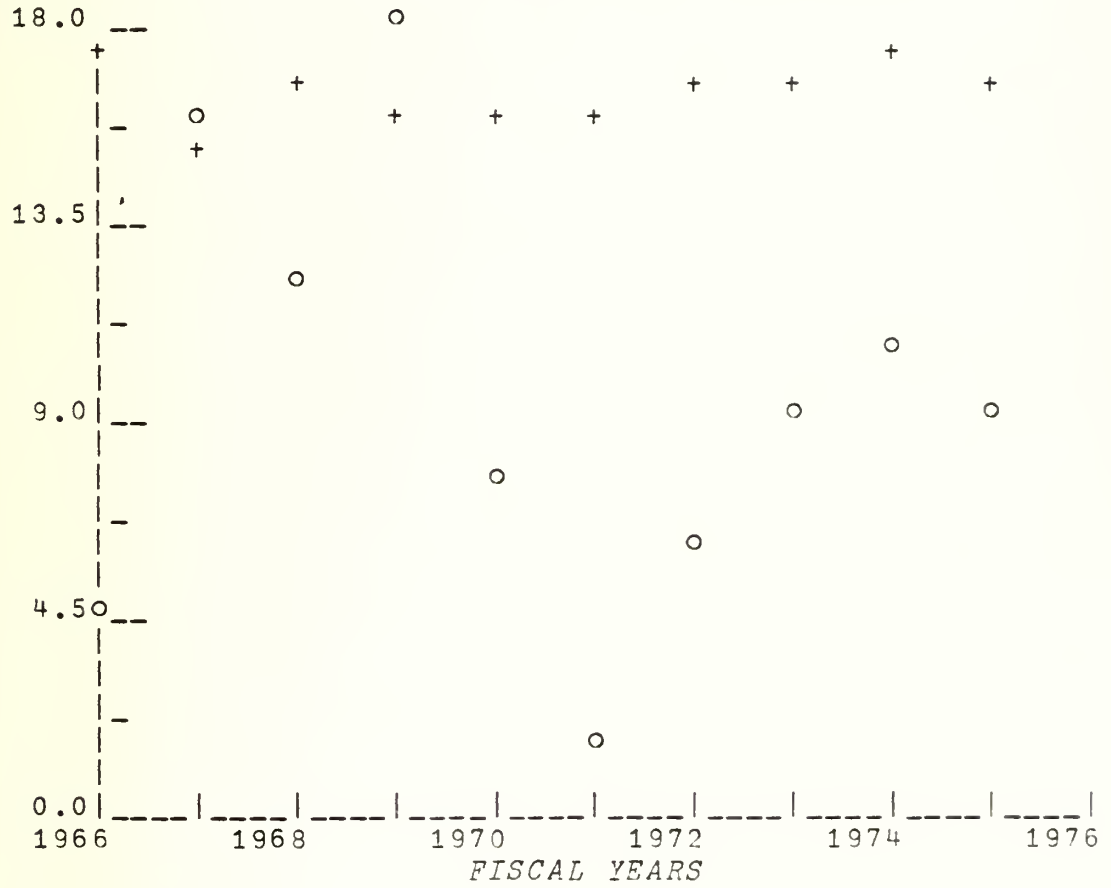
VOLUME(o) IN UNITS OF 10 AND MEAN LOS(+) IN YEARS



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=1500 *PAY GRADE*=8

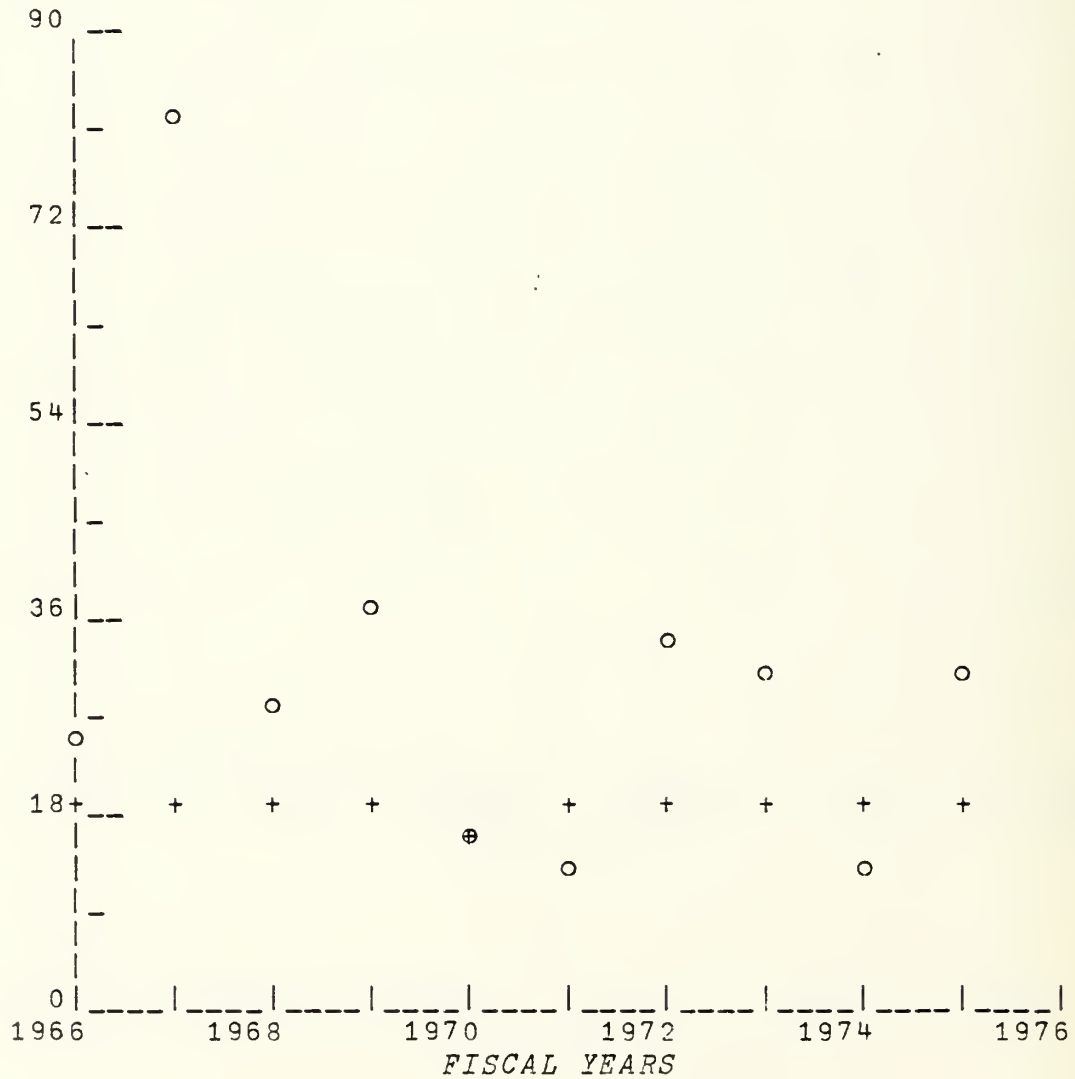
VOLUME(o) *IN UNITS OF* 10 *AND MEAN LOS*(+) *IN YEARS*



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=1500 PAY GRADE=9

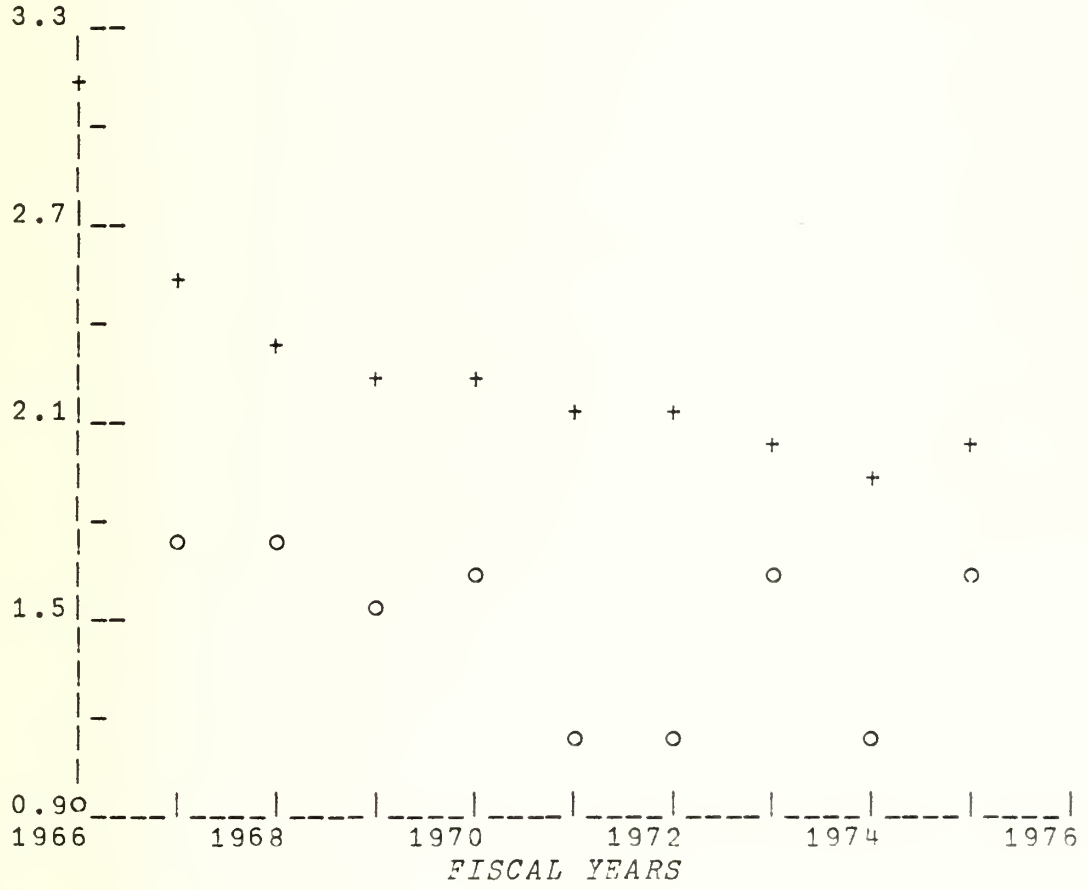
VOLUME(o) IN UNITS OF 1 AND MEAN LOS(+) IN YEARS



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=1800 PAY GRADE=4

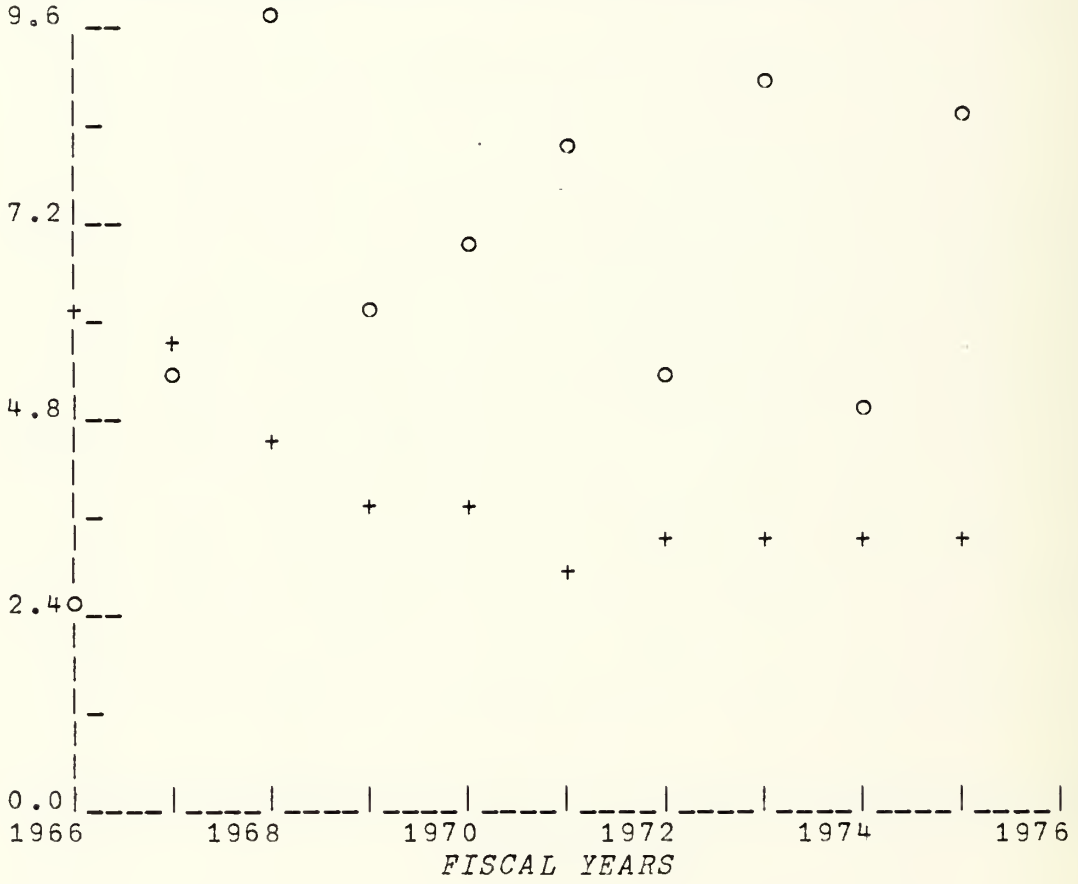
VOLUME(o) IN UNITS OF 1000 AND MEAN LOS(+) IN YEARS



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=1800 *PAY GRADE*=5

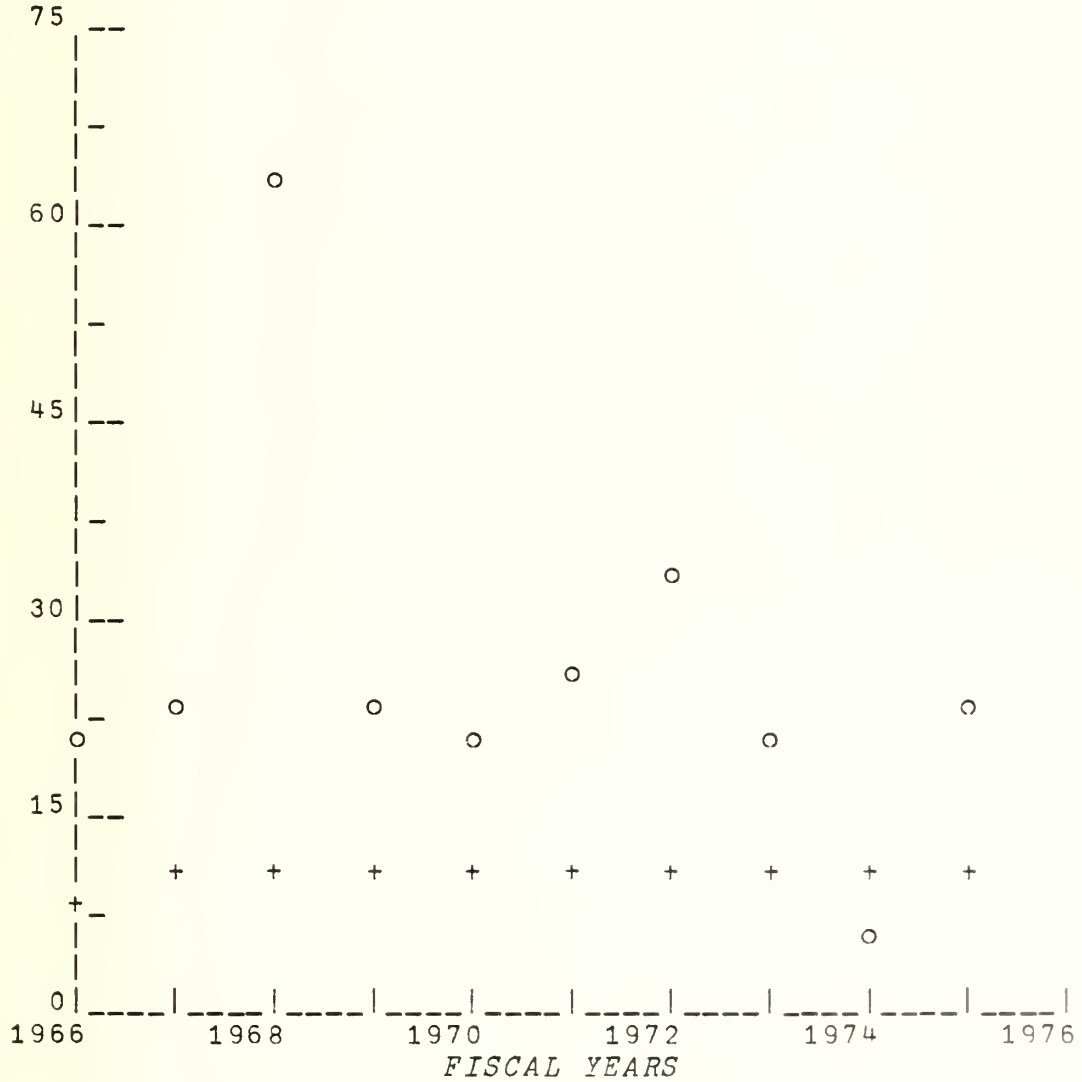
VOLUME(o) *IN UNITS OF* 100 *AND MEAN LOS*(+) *IN YEARS*



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=1800 PAY GRADE=6

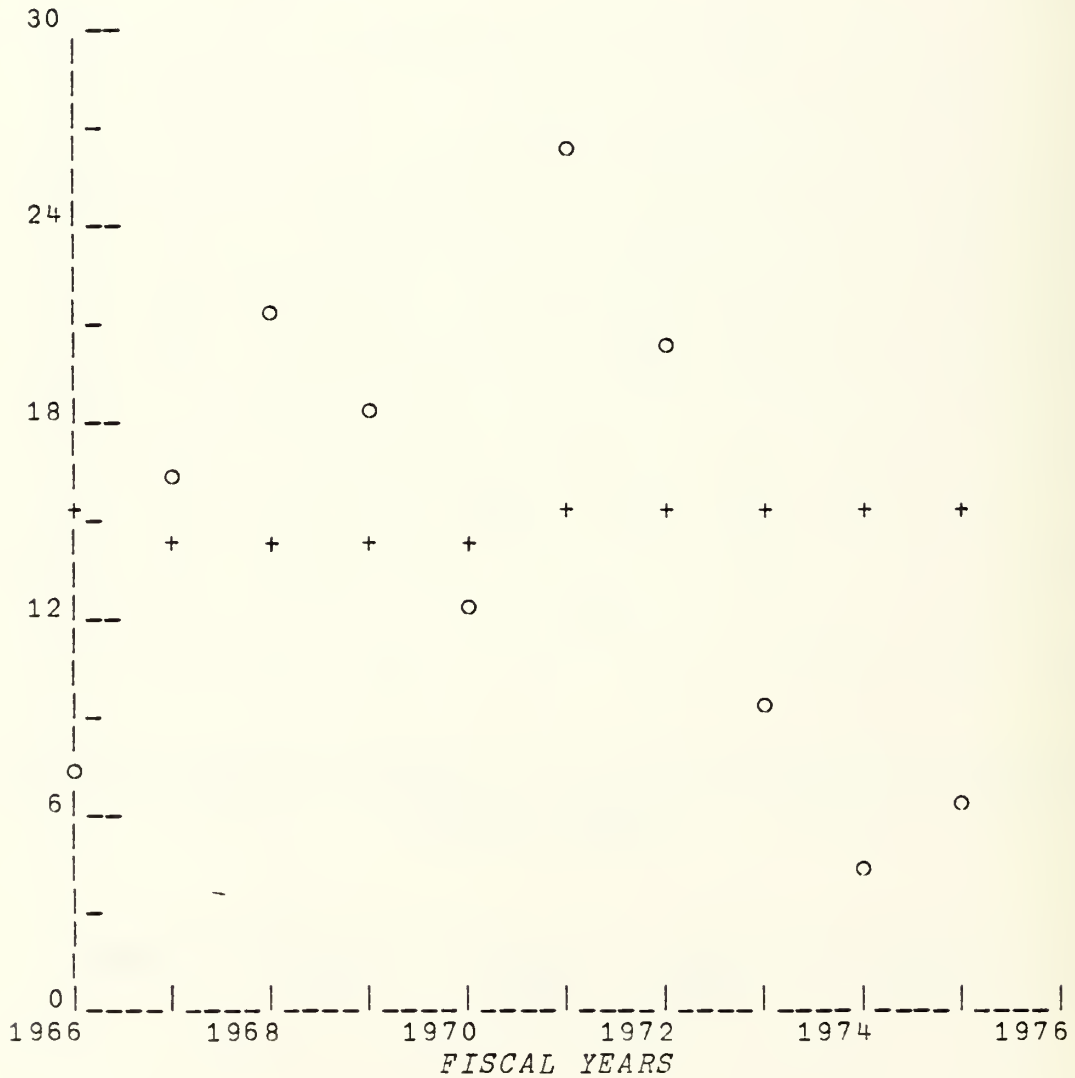
VOLUME(o) IN UNITS OF 10 AND MEAN LOS(+) IN YEARS



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=1800 *PAY GRADE*=7

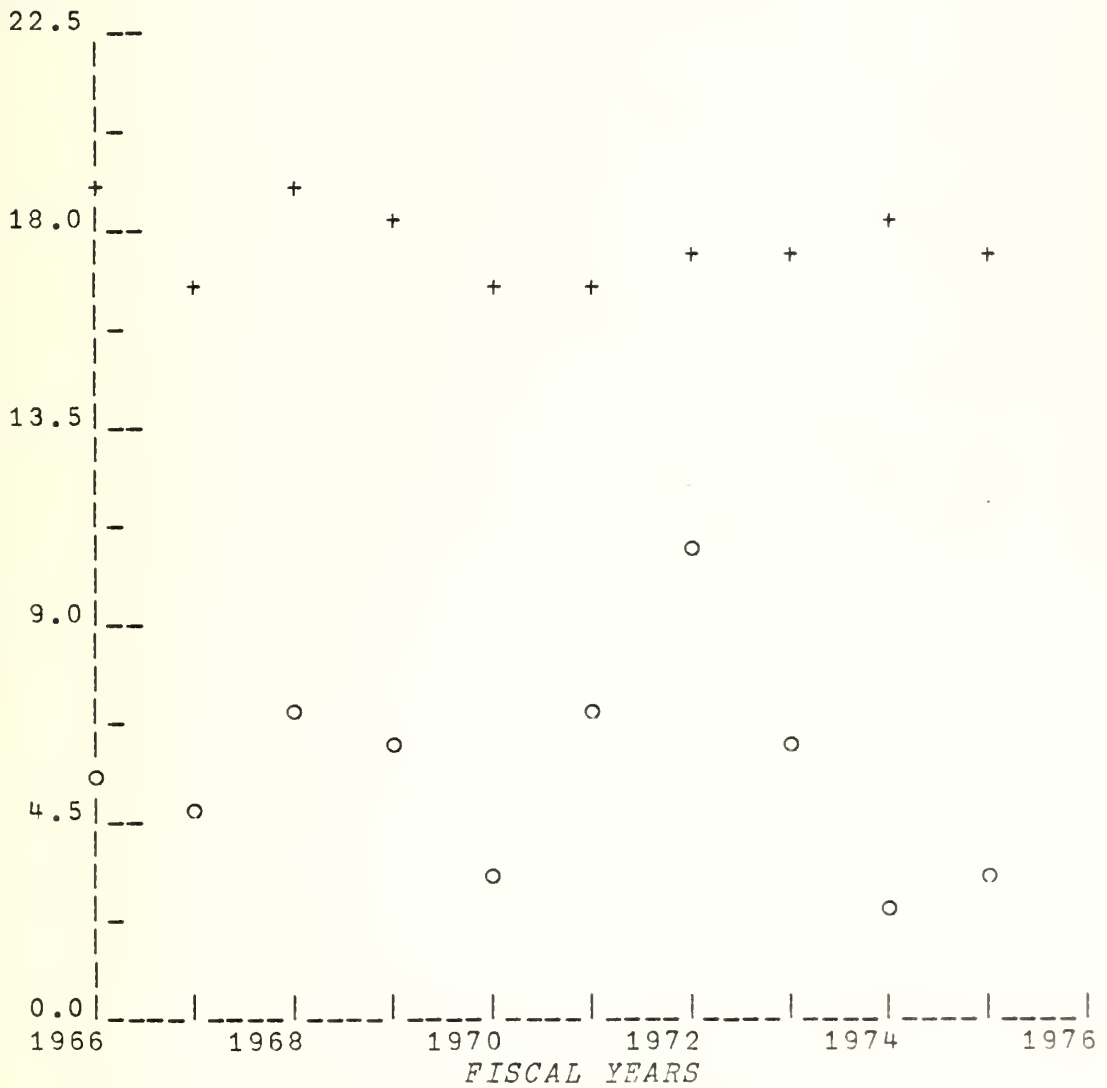
VOLUME(o) *IN UNITS OF* 10 *AND MEAN LOS*(+) *IN YEARS*



VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=1800 PAY GRADE=8

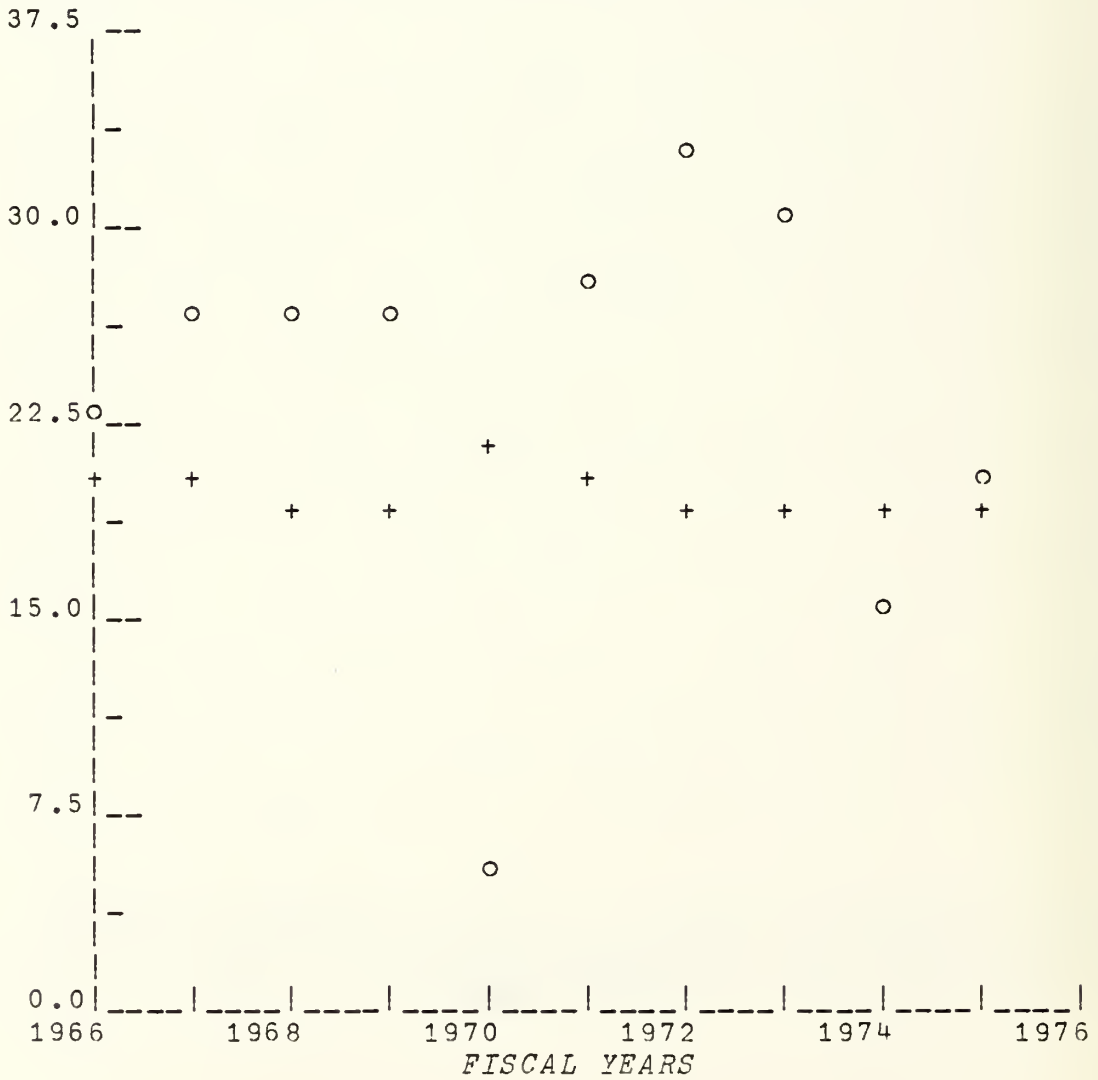
VOLUME(o) IN UNITS OF 10 AND MEAN LOS(+) IN YEARS



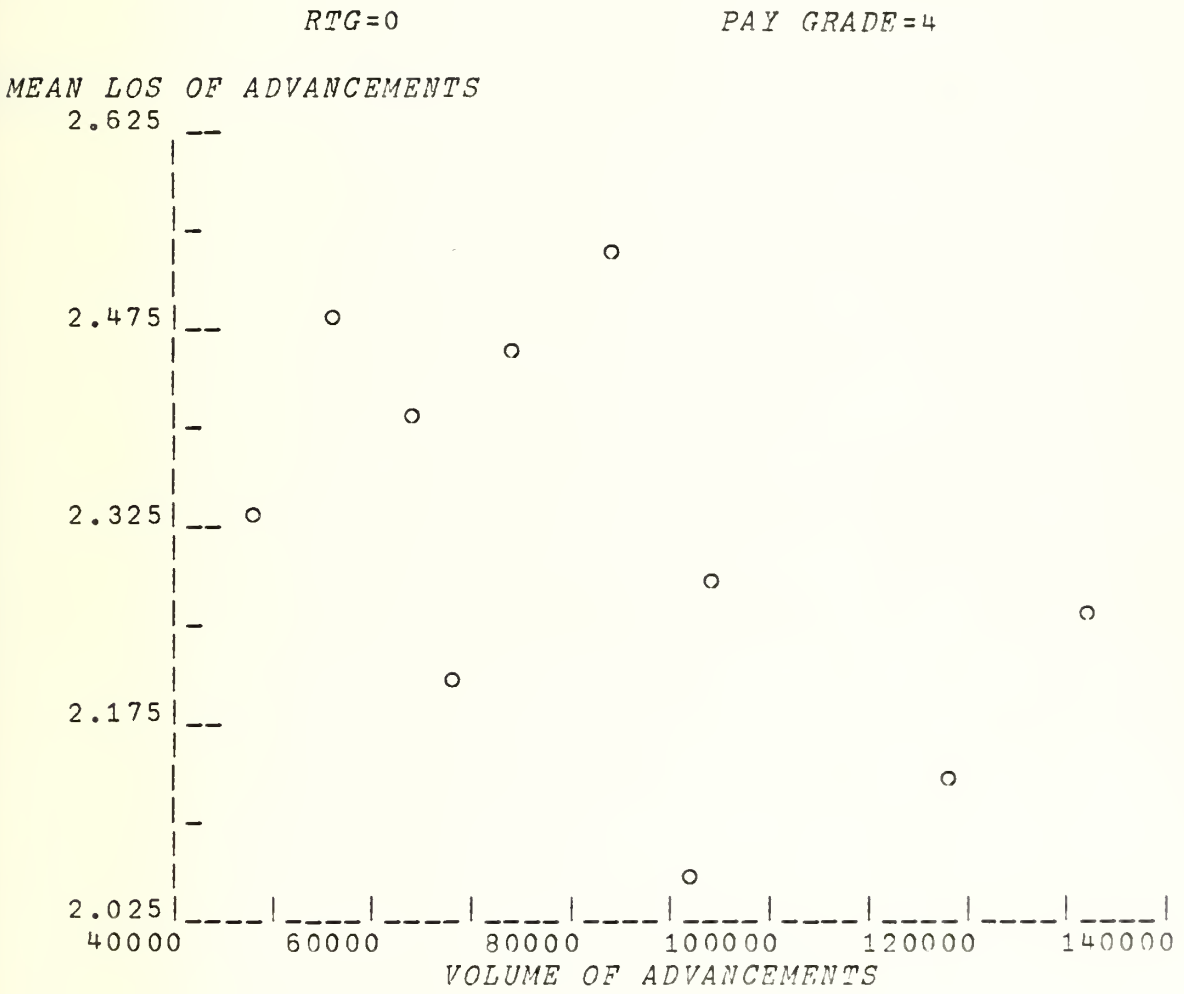
VOLUME AND MEAN LOS OF ADVANCEMENTS GRAPHED VS. FISCAL YEARS.

RTG=1800 PAY GRADE=9

VOLUME(o) IN UNITS OF 1 AND MEAN LOS(+) IN YEARS

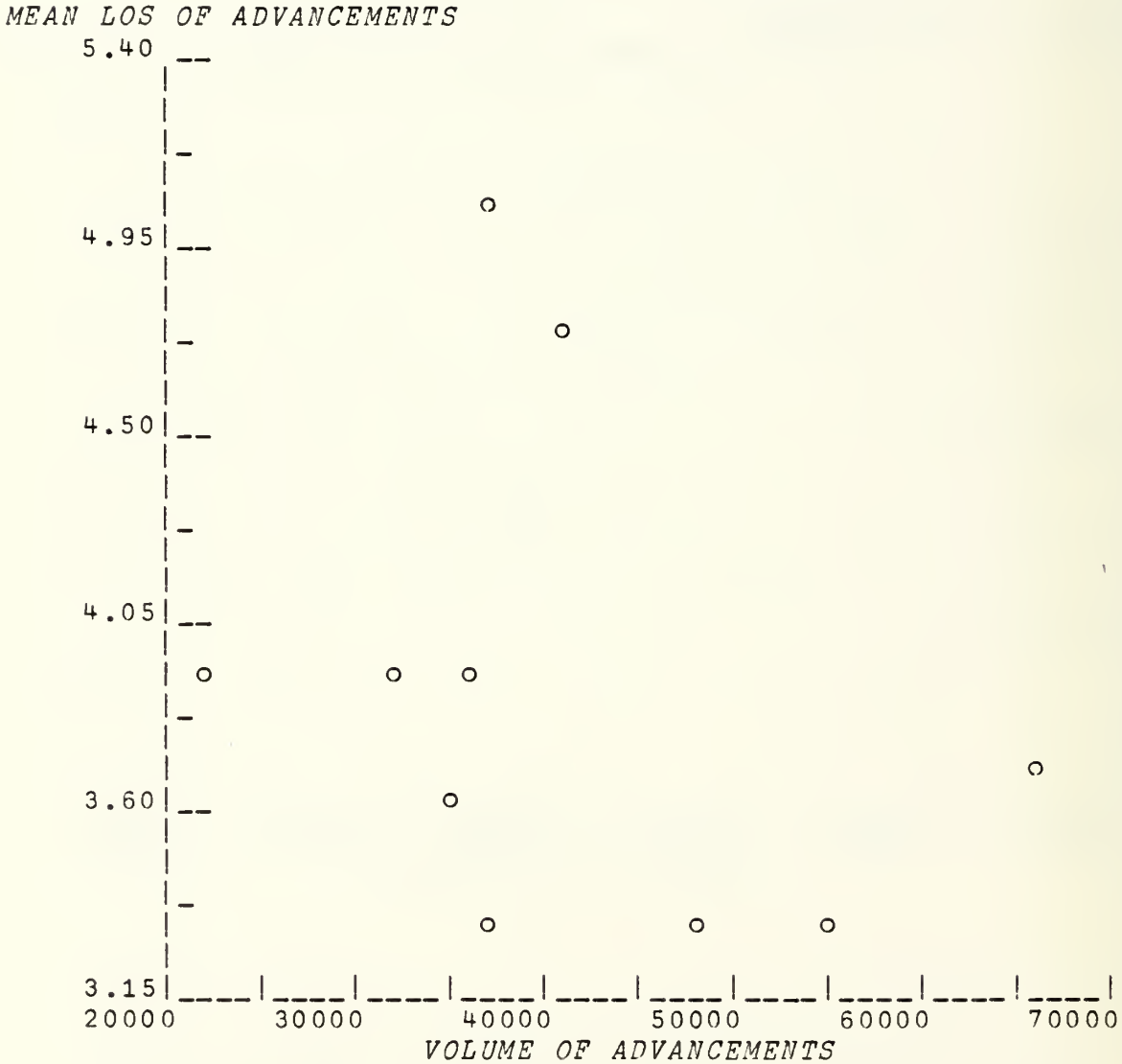


MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.



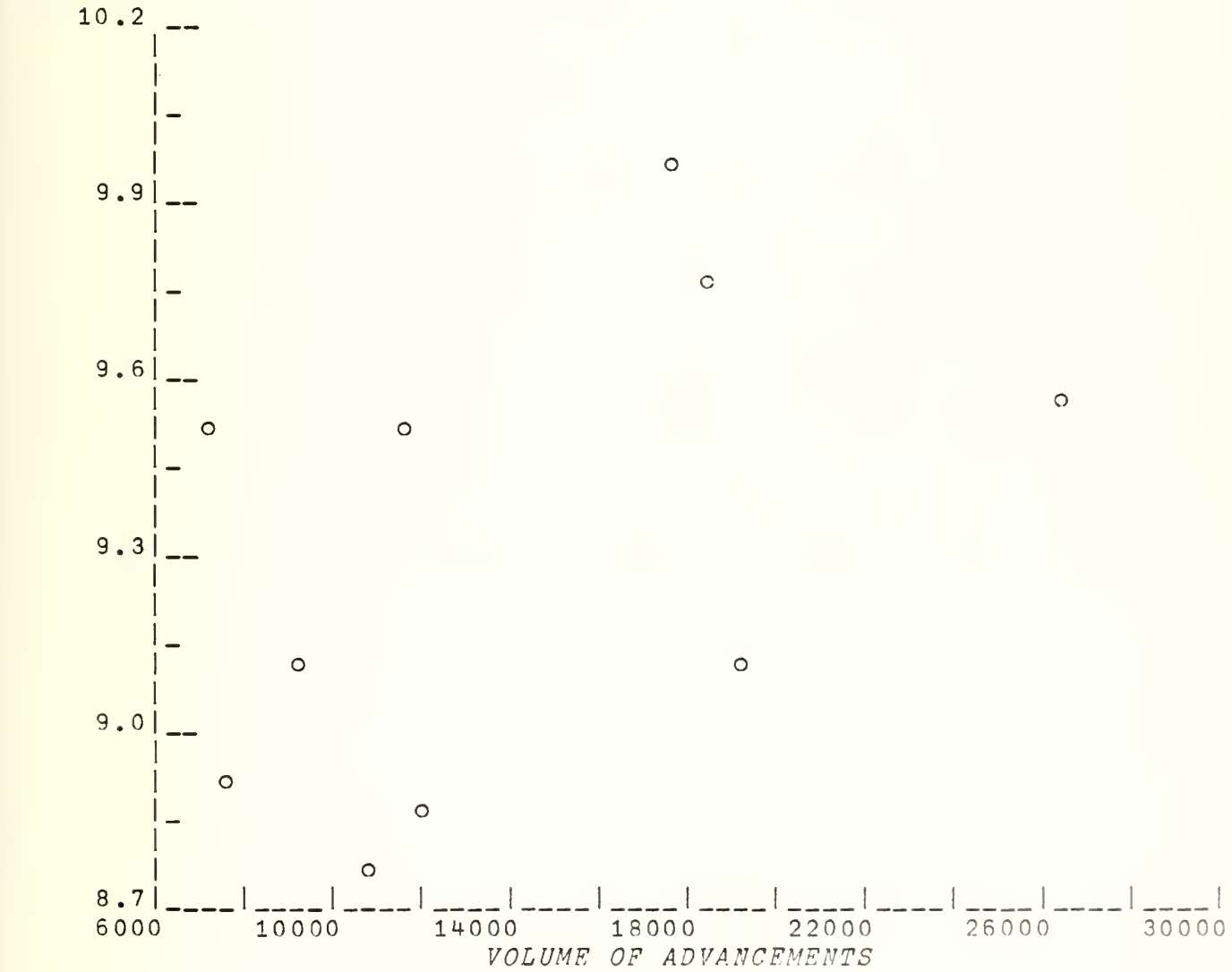
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=0 PAY GRADE=5



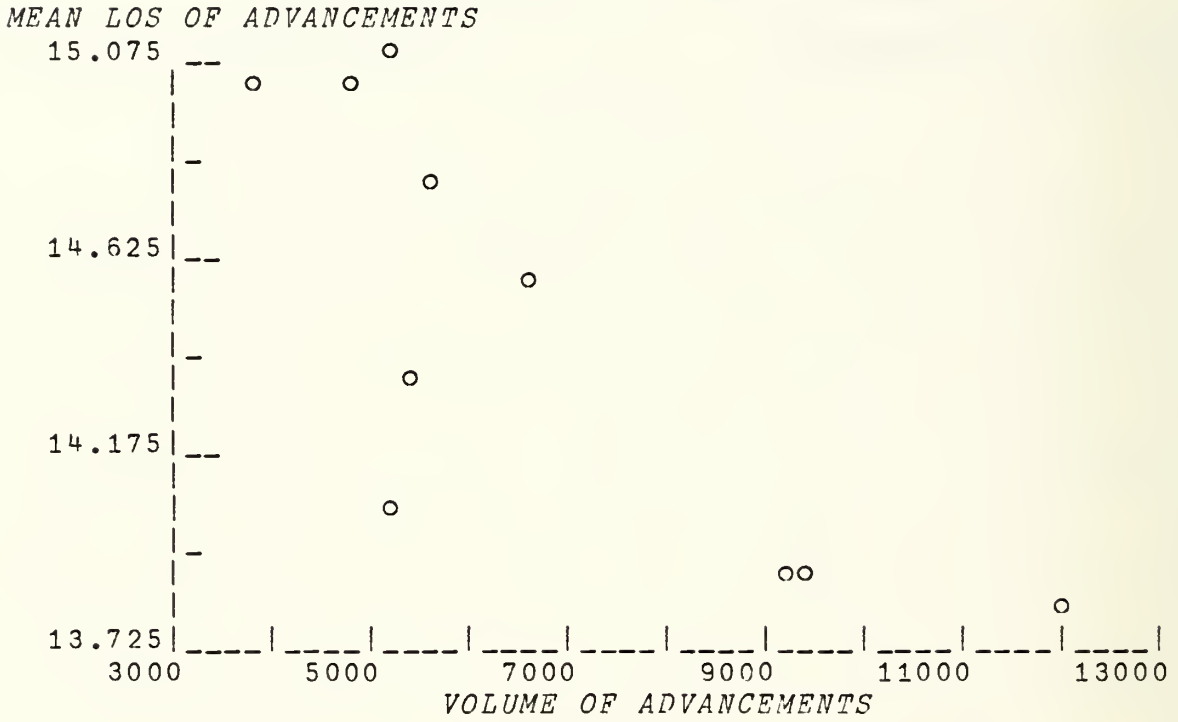
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=0 PAY GRADE=6



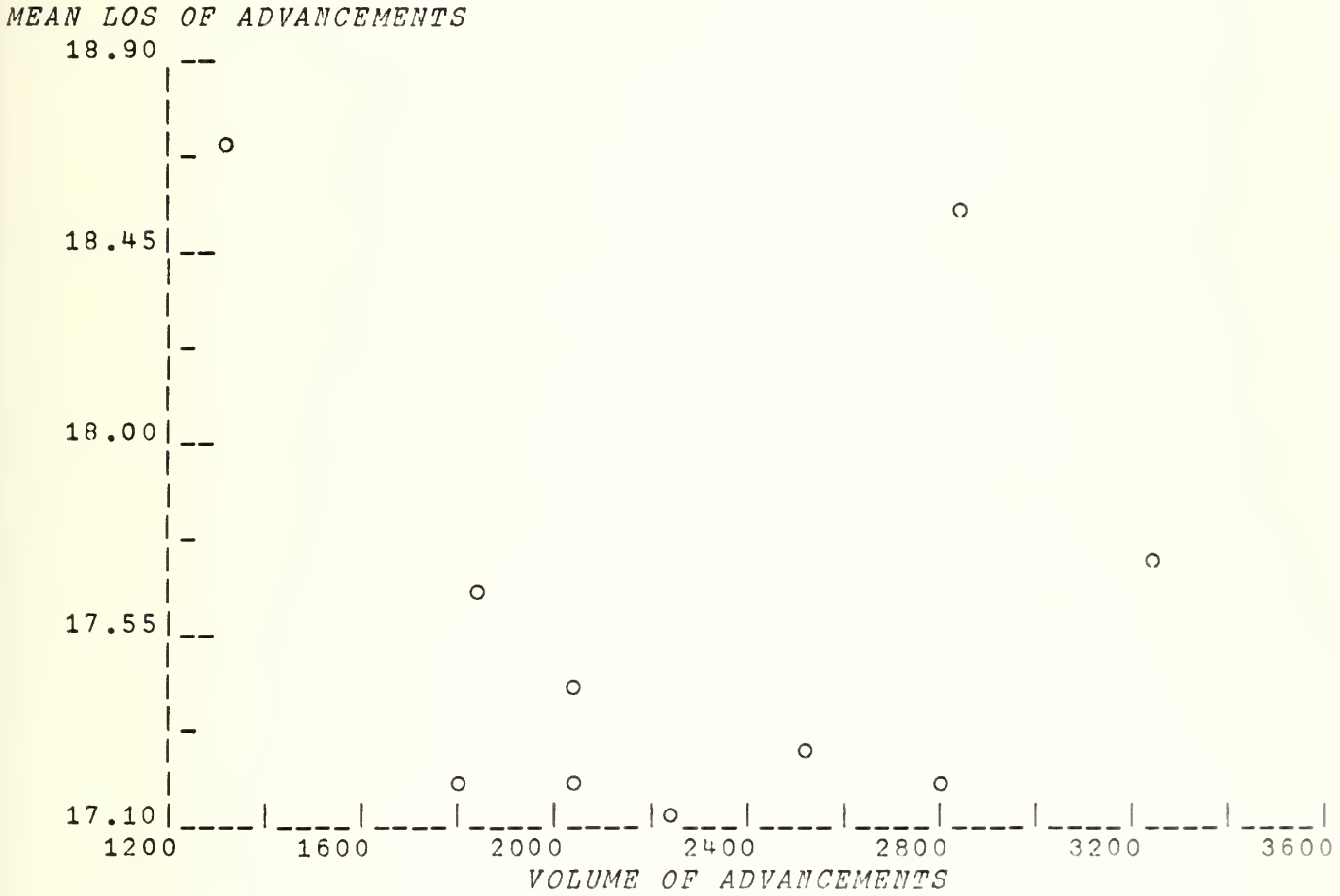
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=0 PAY GRADE=7



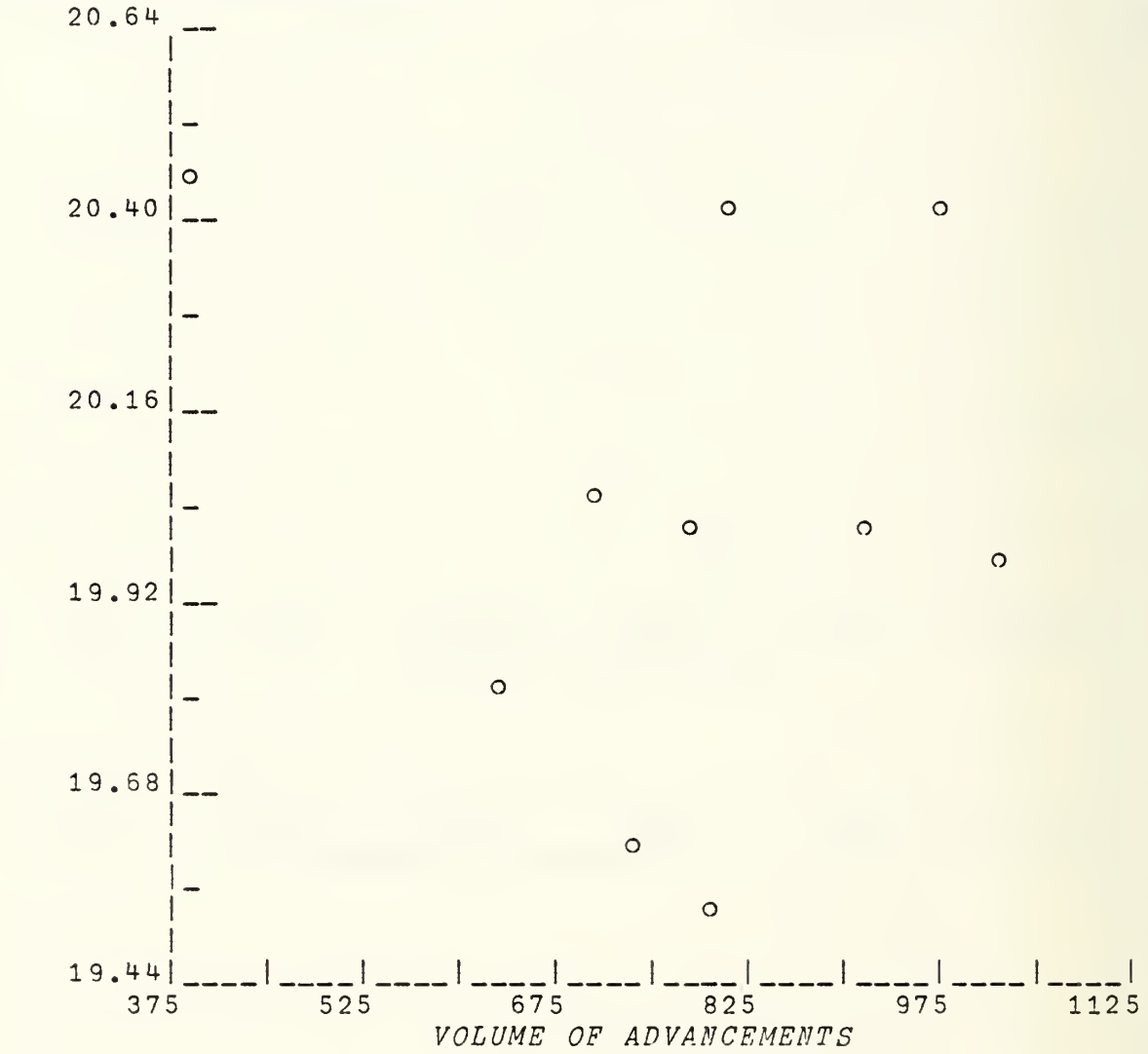
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=0 PAY GRADE=8



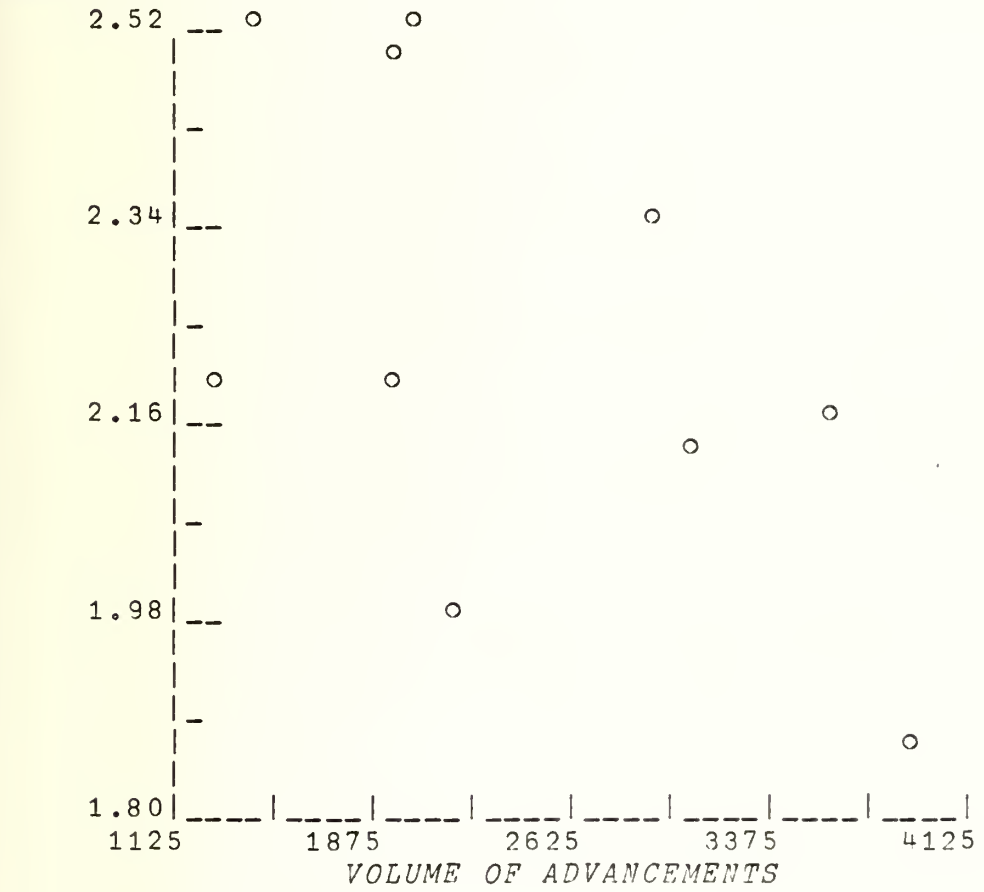
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=0 PAY GRADE=9



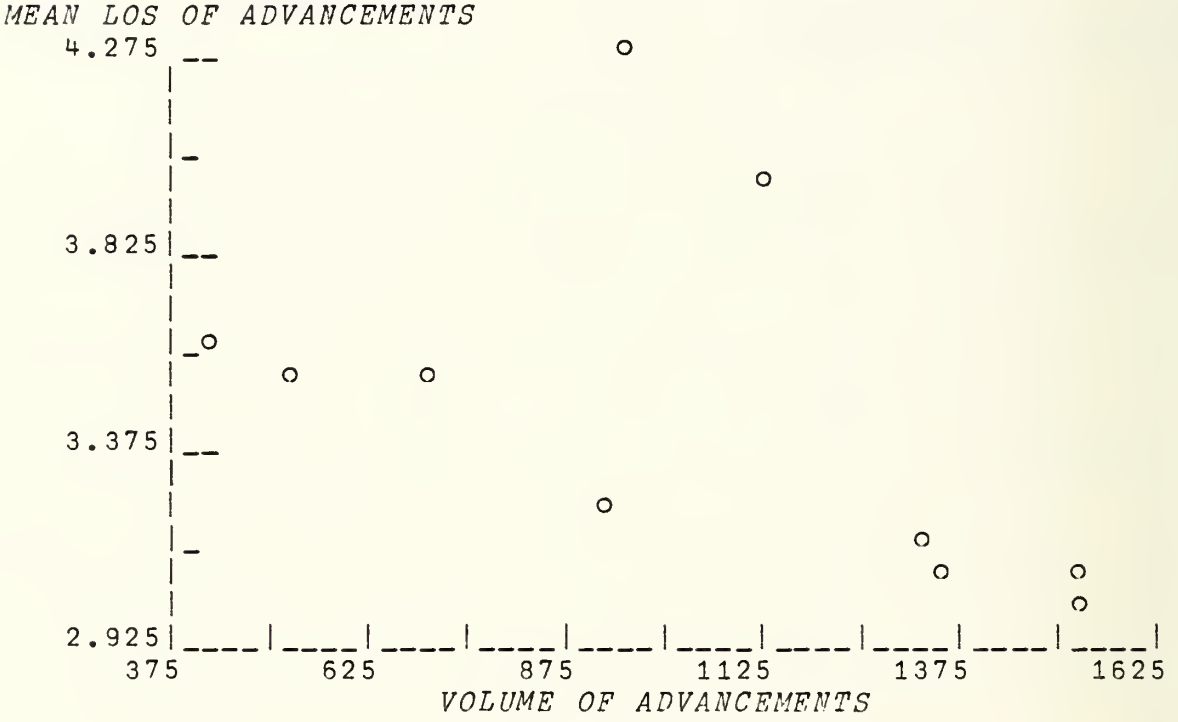
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=300 PAY GRADE=4



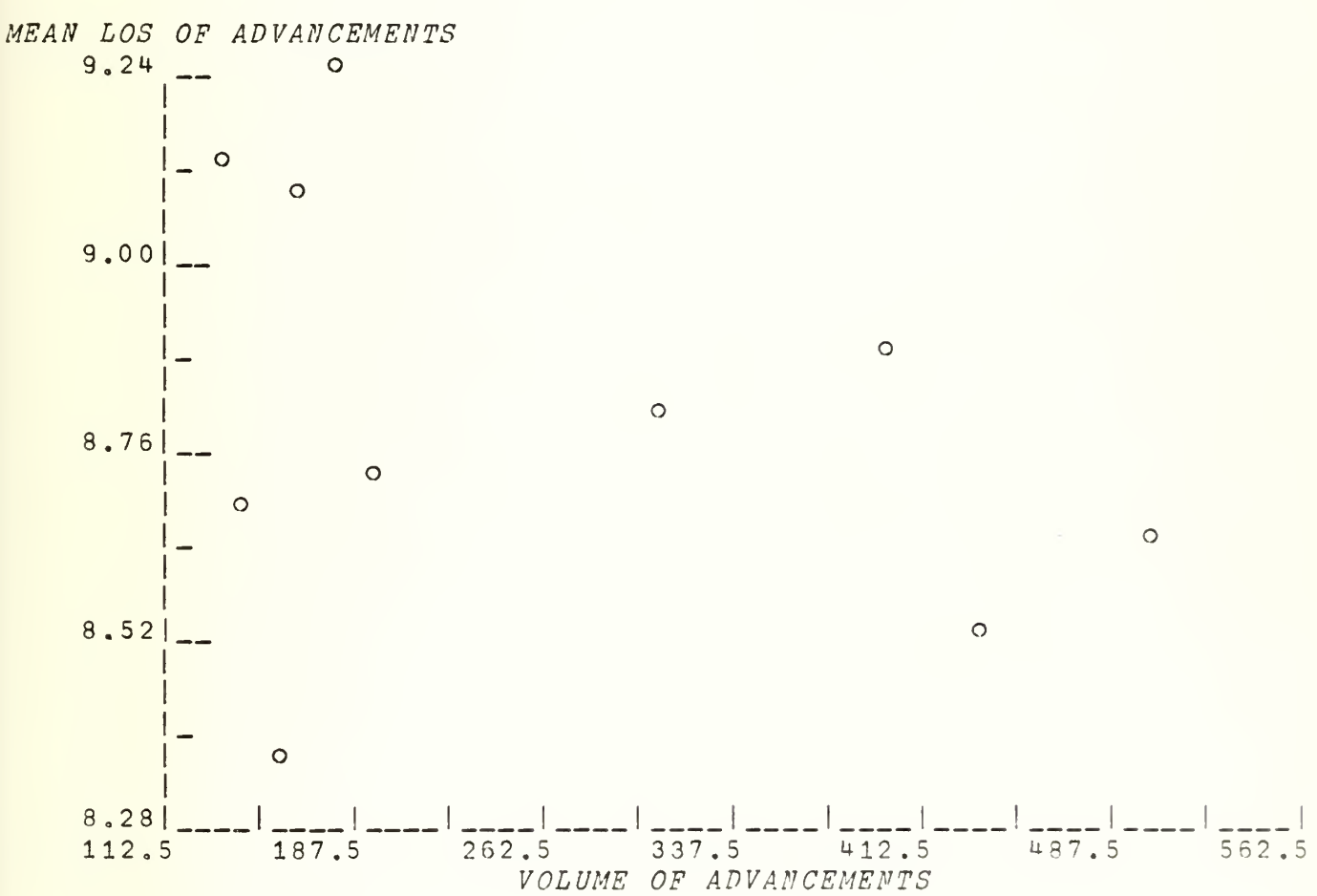
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=300 *PAY GRADE*=5



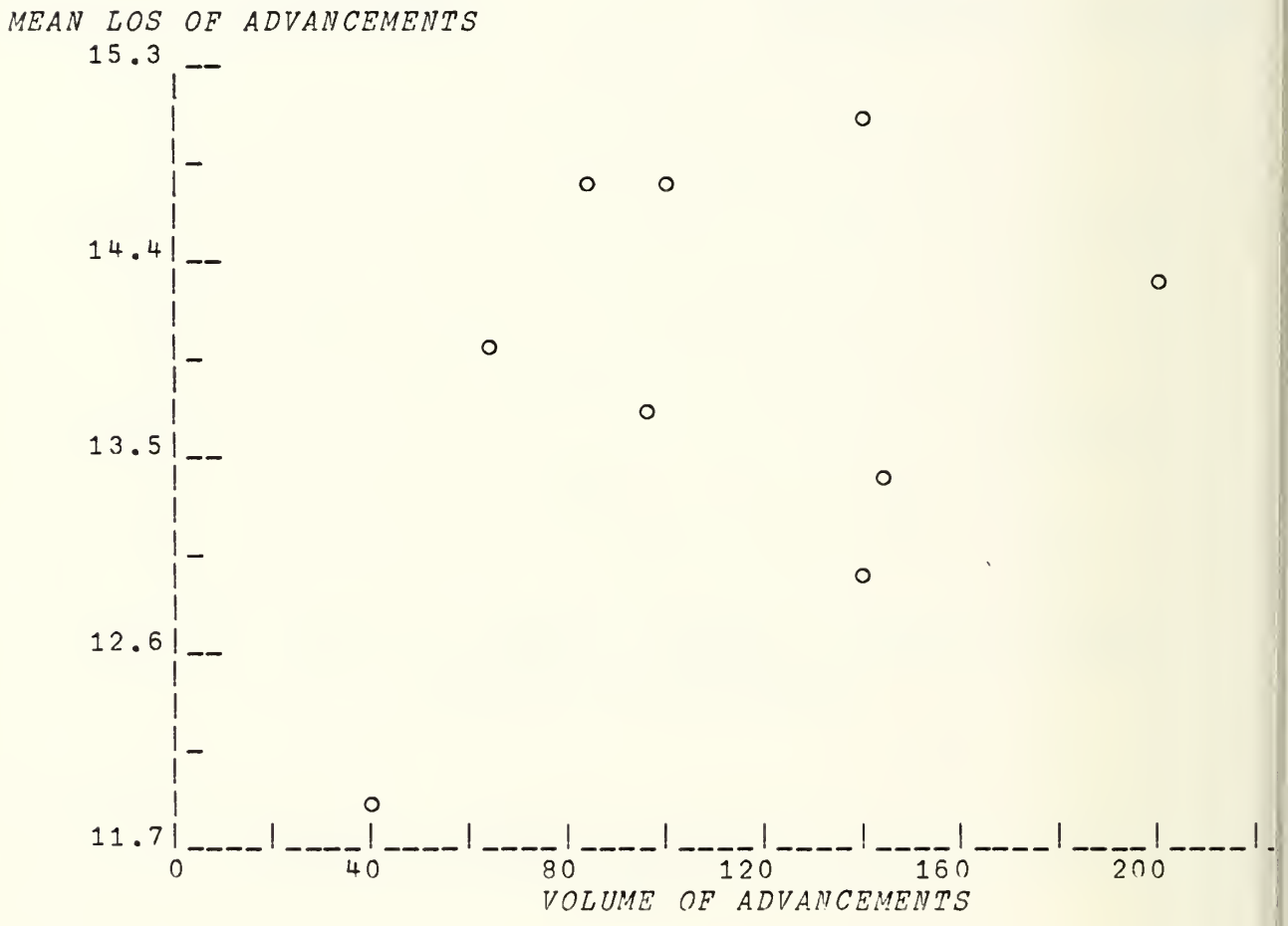
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=300 PAY GRADE=6



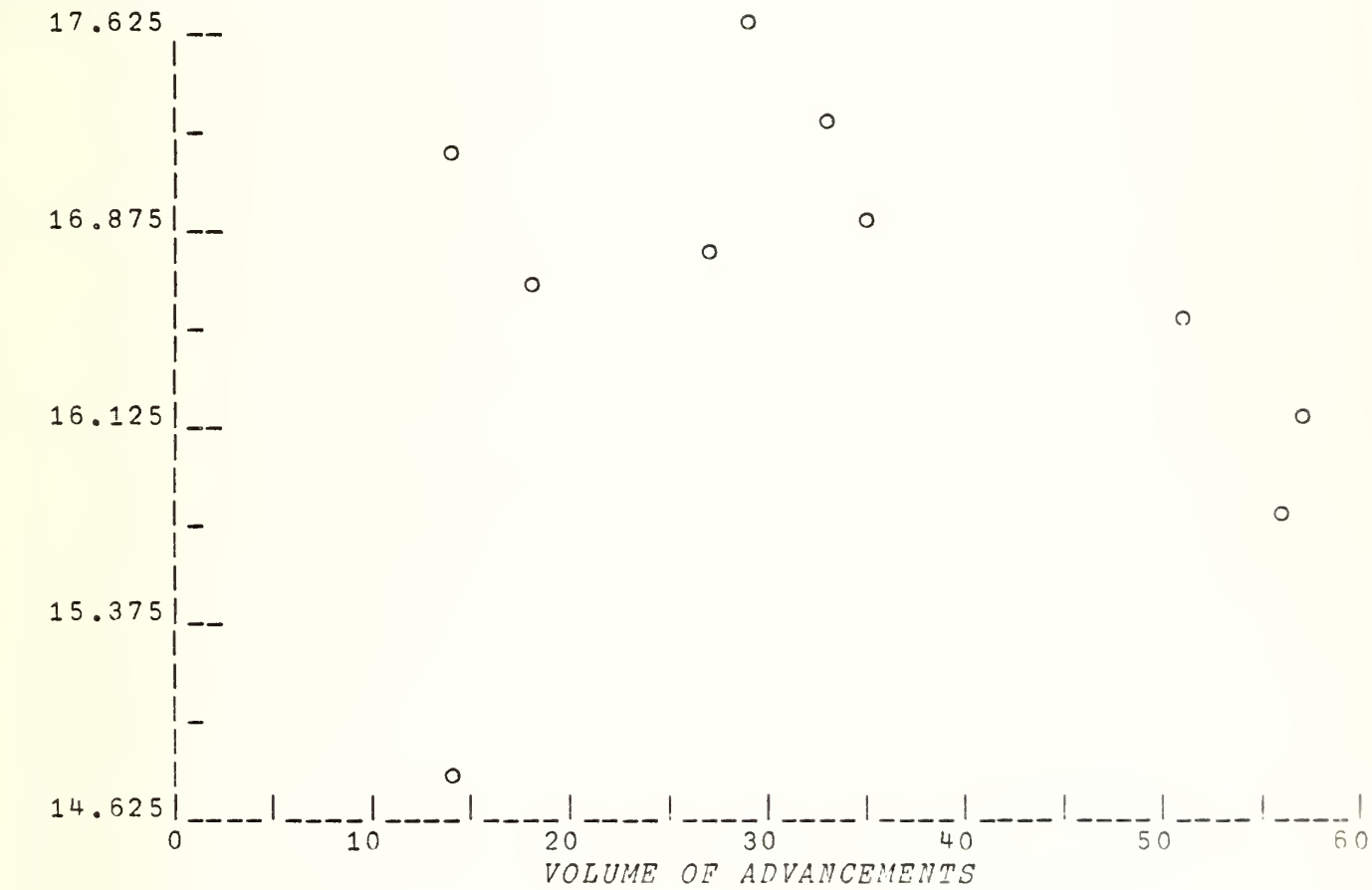
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=300 PAY GRADE=7



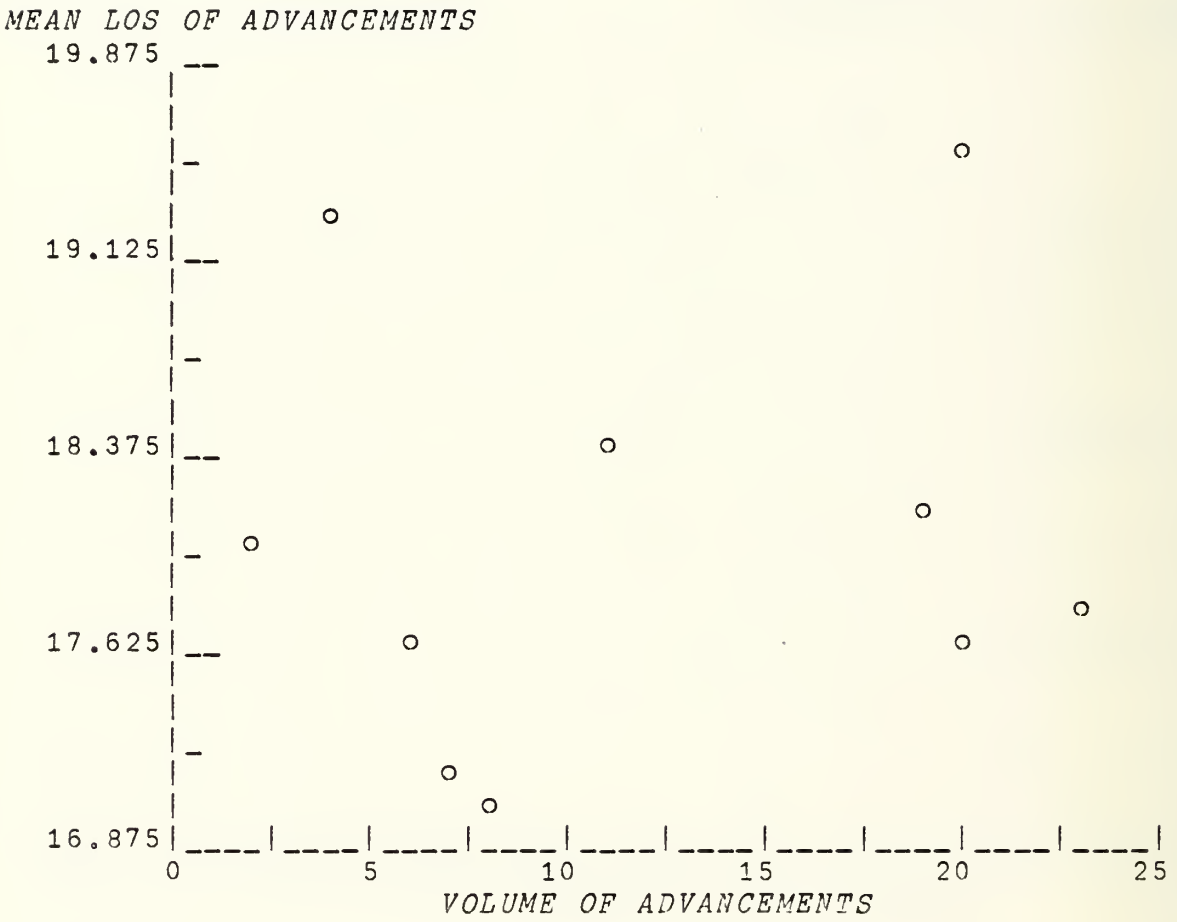
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=300 PAY GRADE=8



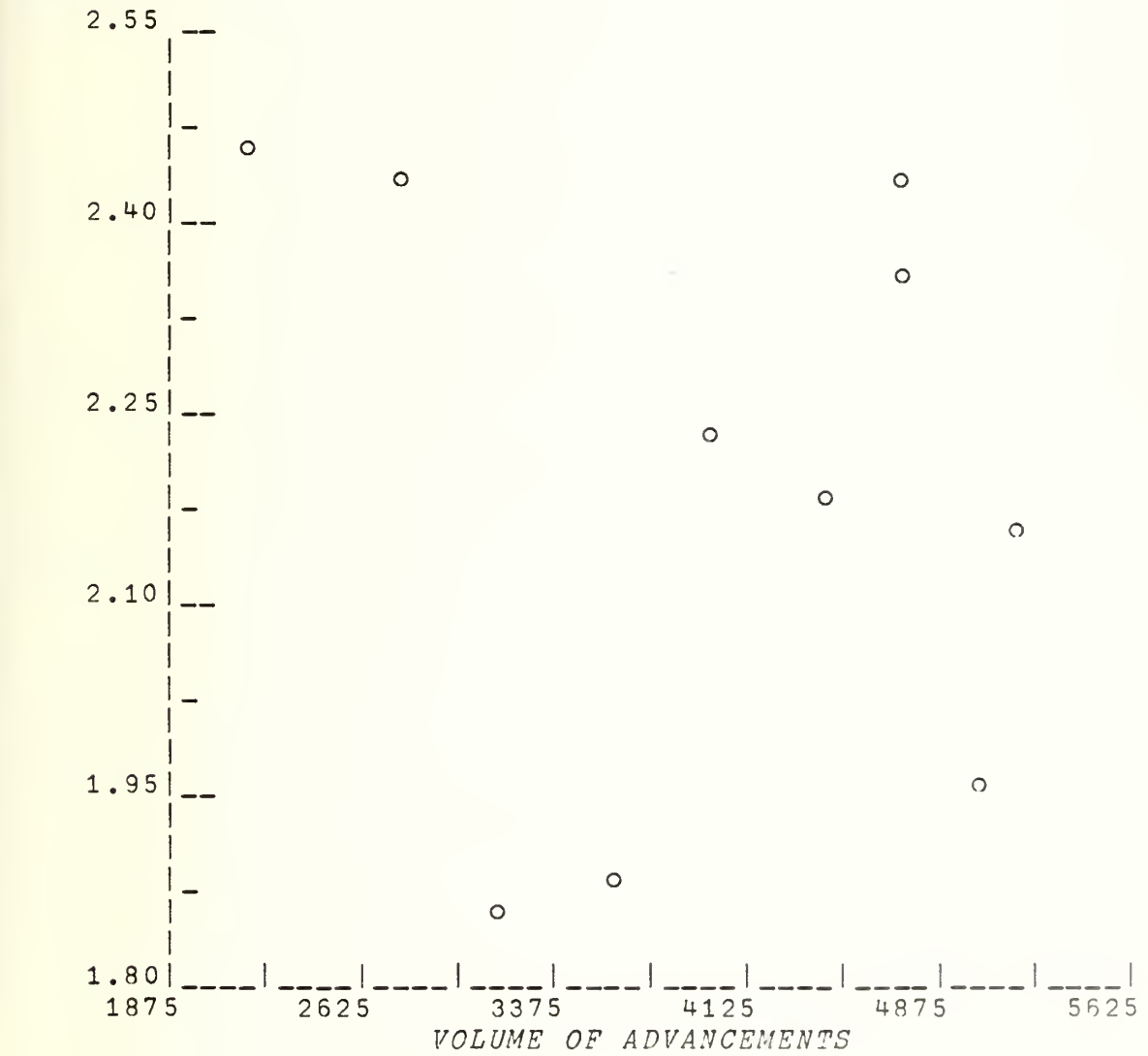
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=300 PAY GRADE=9



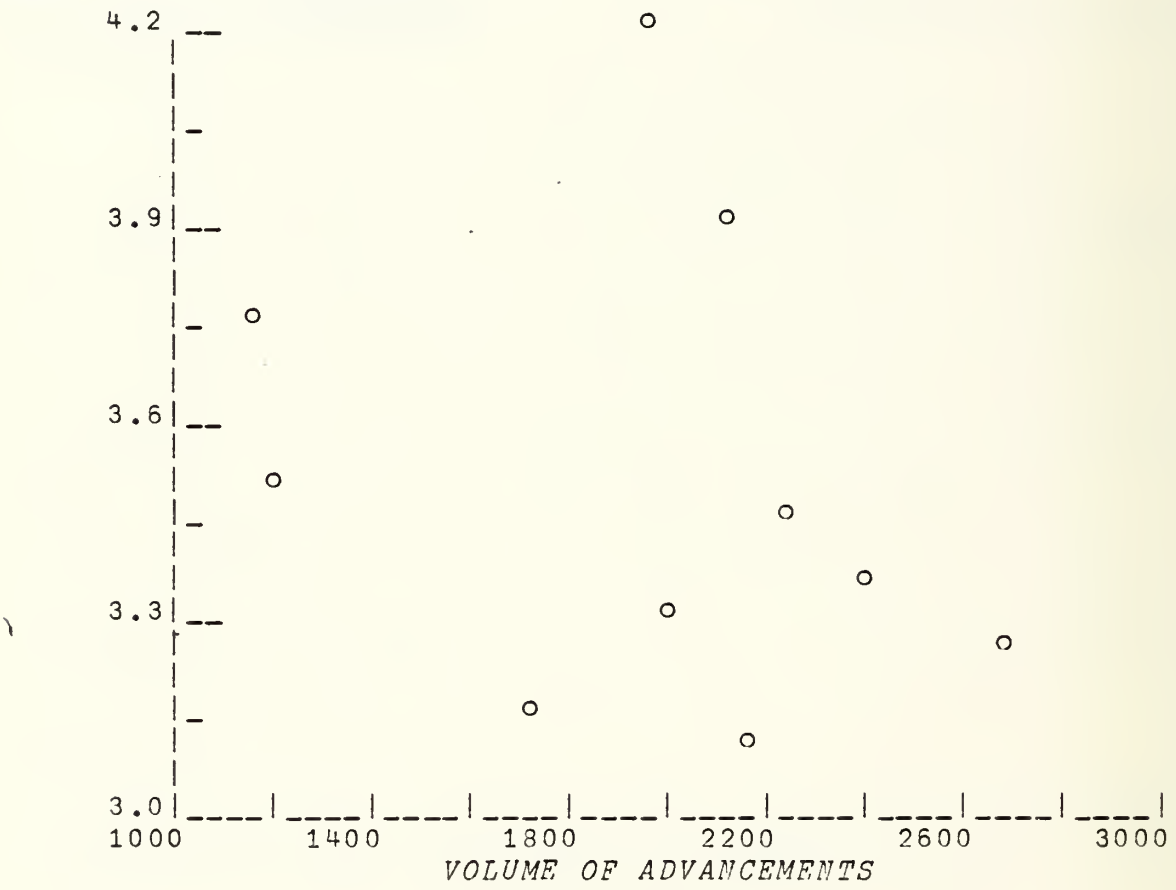
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=1500 PAY GRADE=4



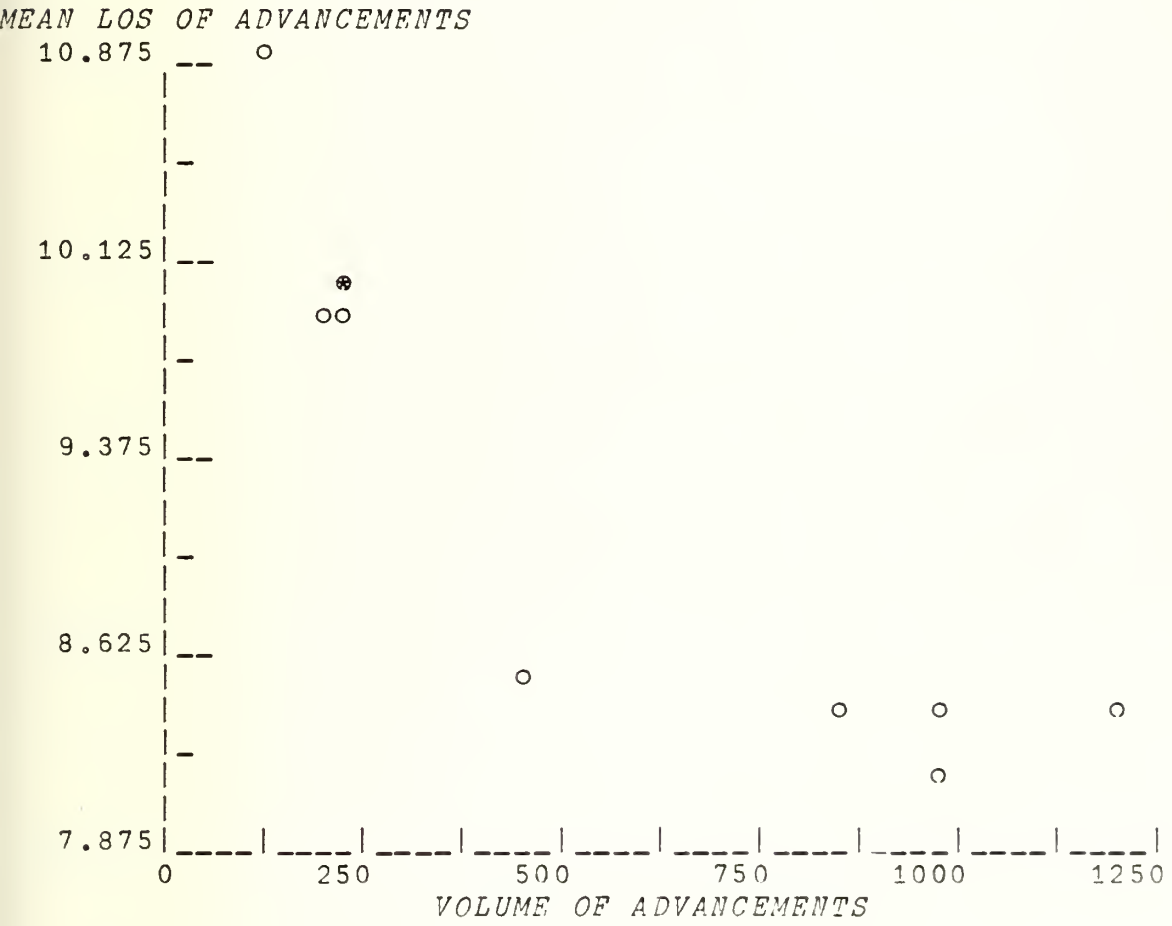
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=1500 PAY GRADE=5



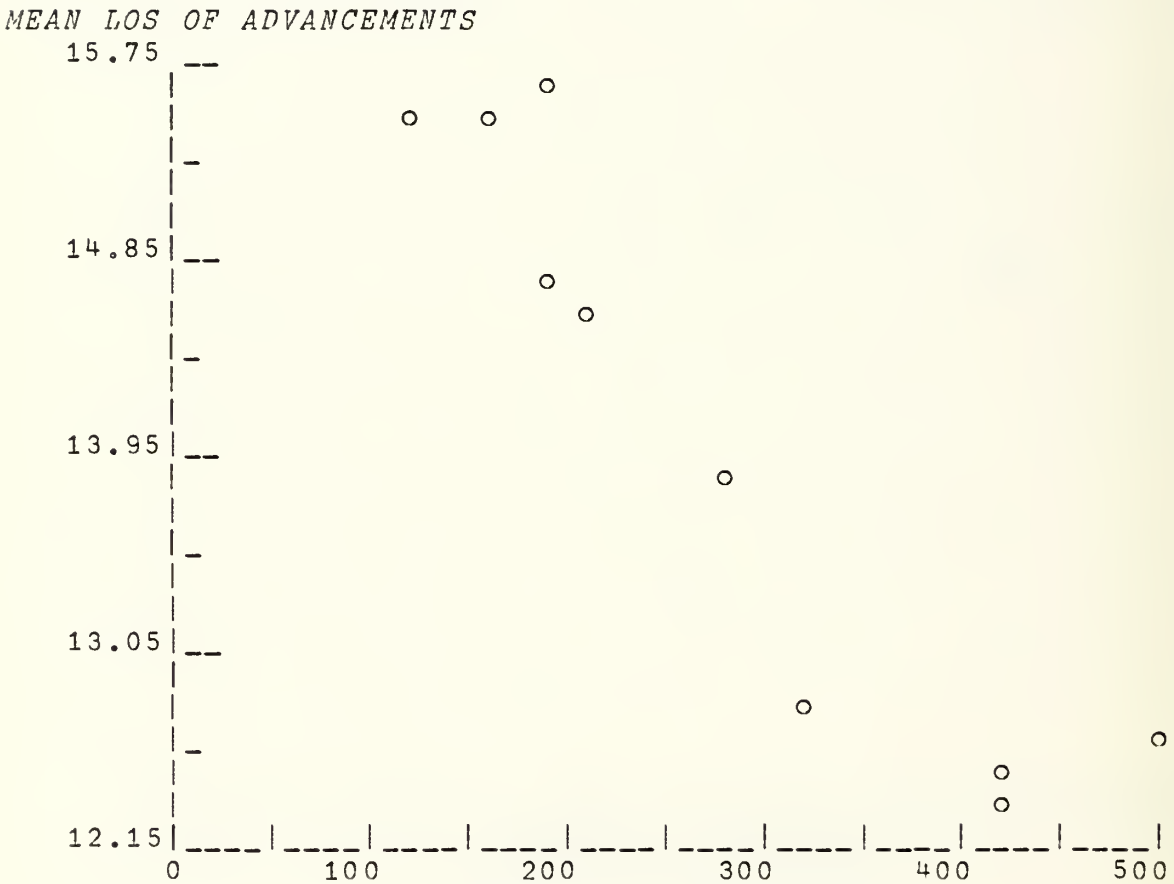
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=1500 PAY GRADE=6



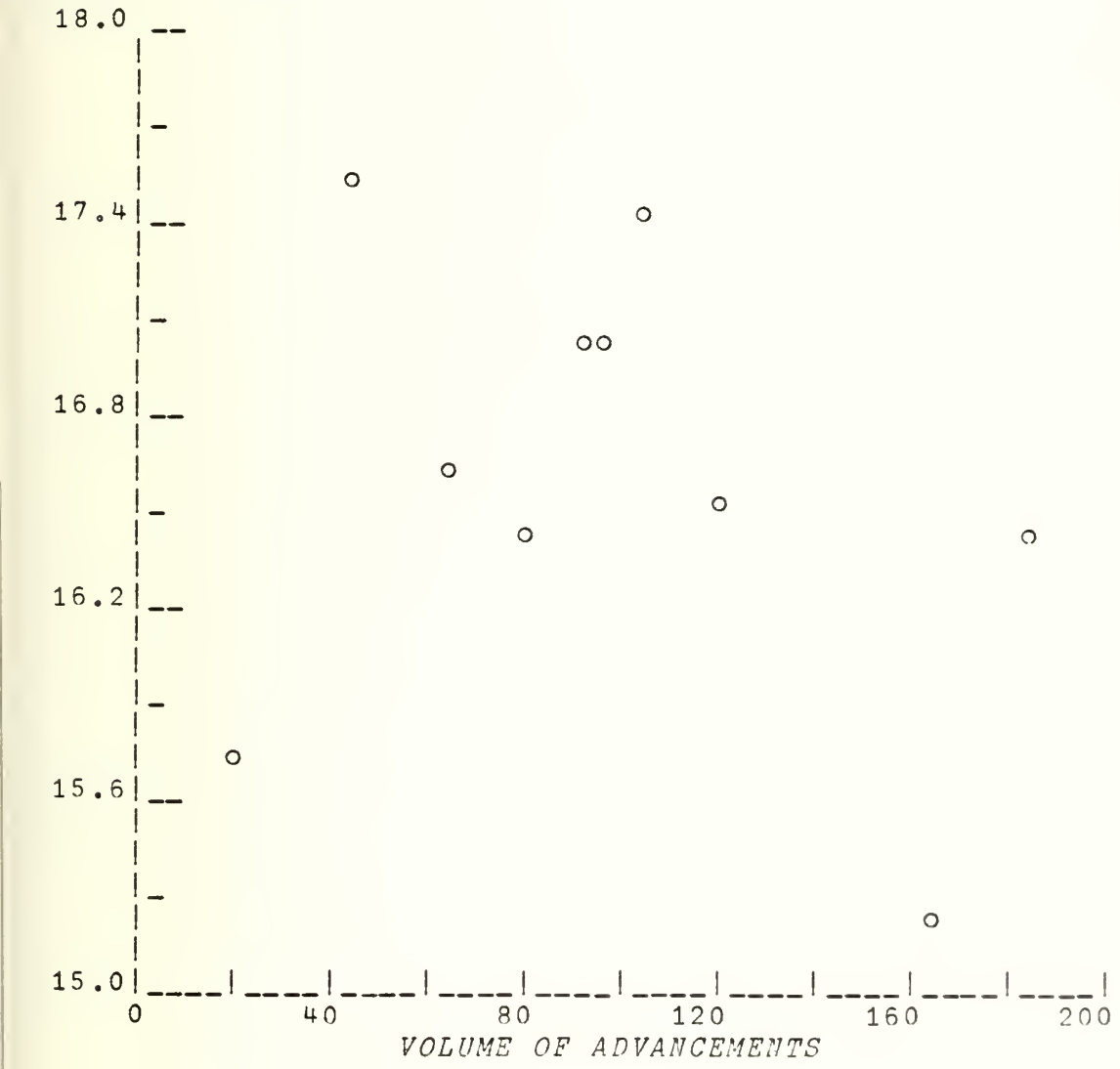
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=1500 PAY GRADE=7



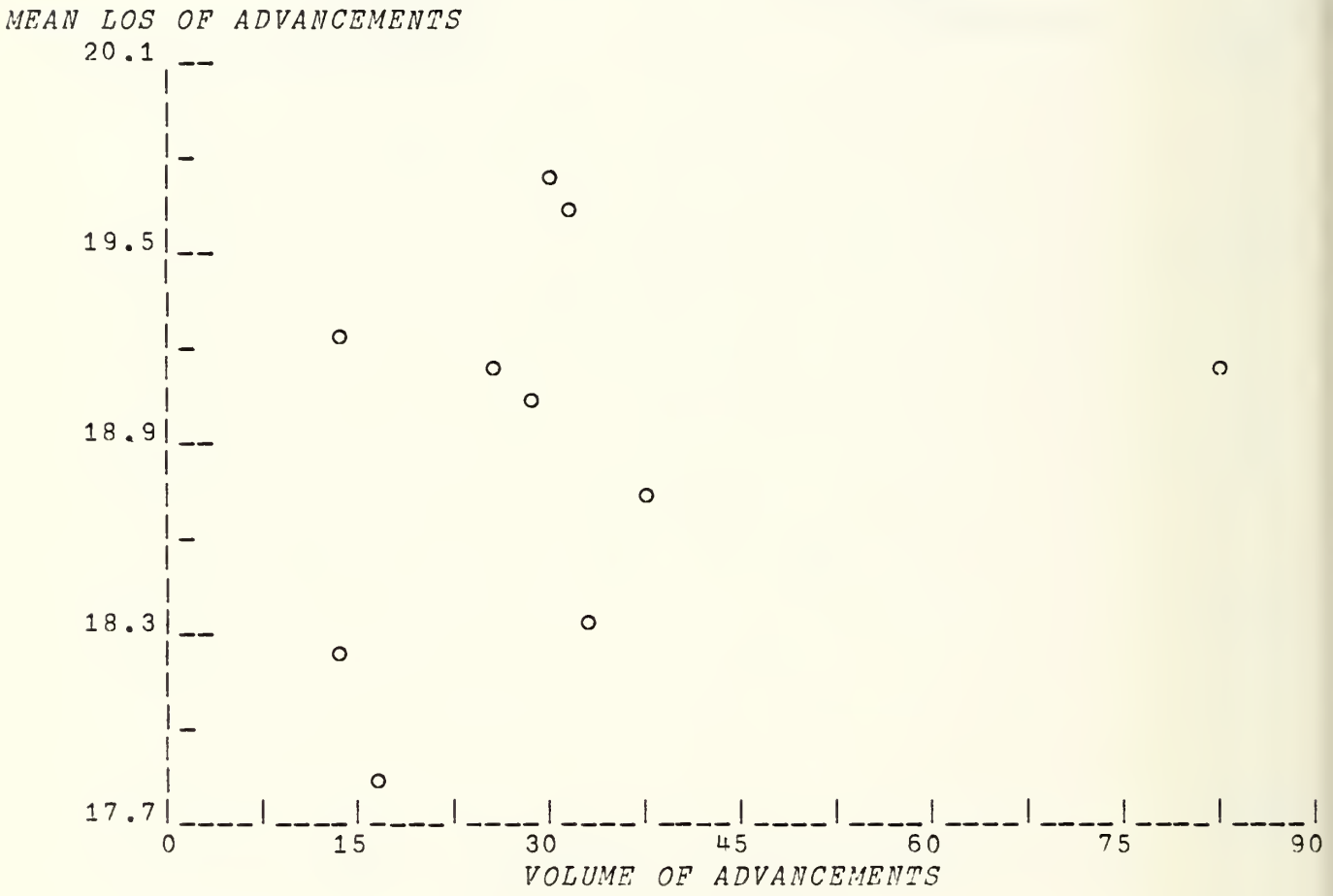
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=1500 PAY GRADE=8



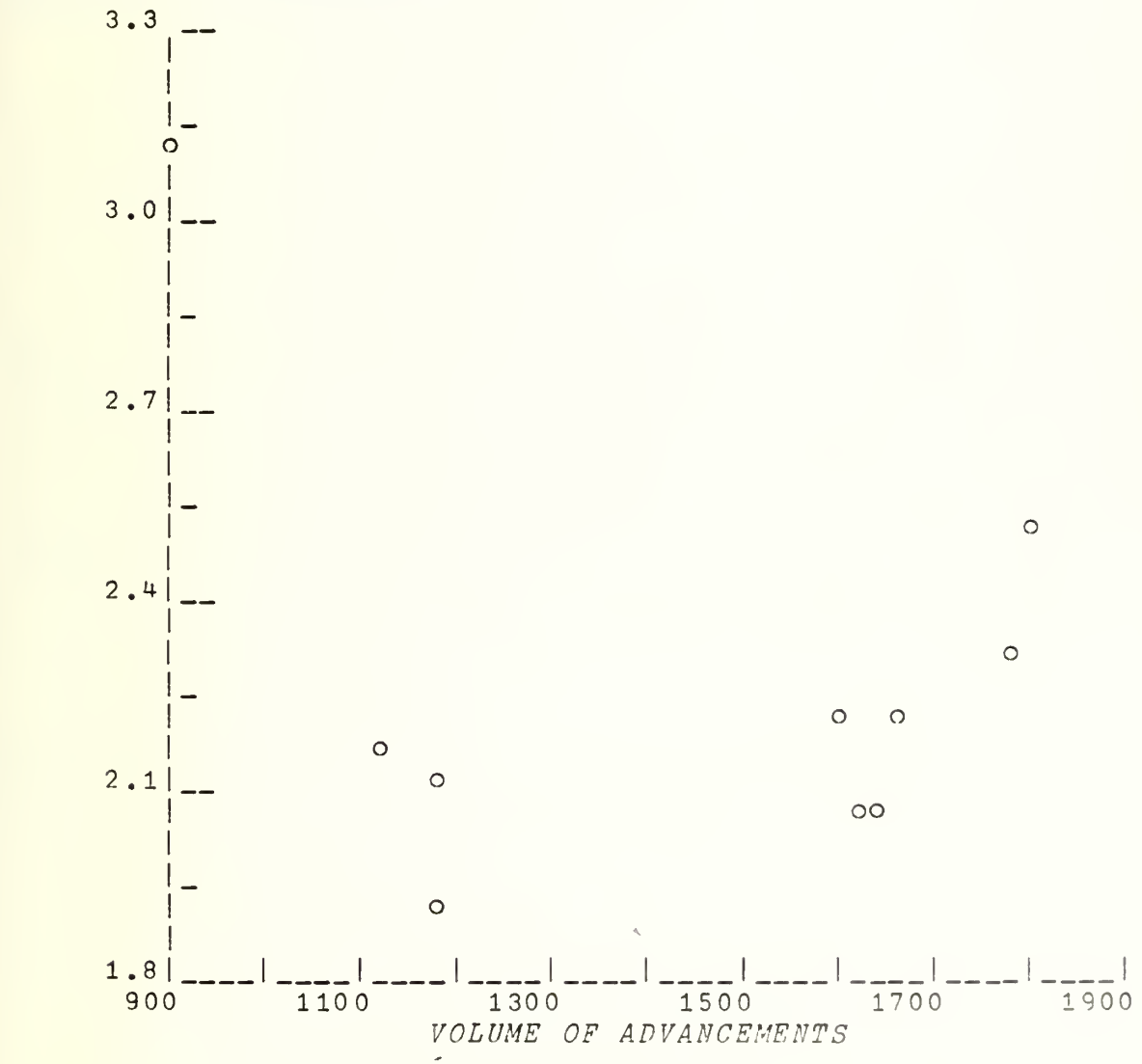
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=1500 *PAY GRADE*=9



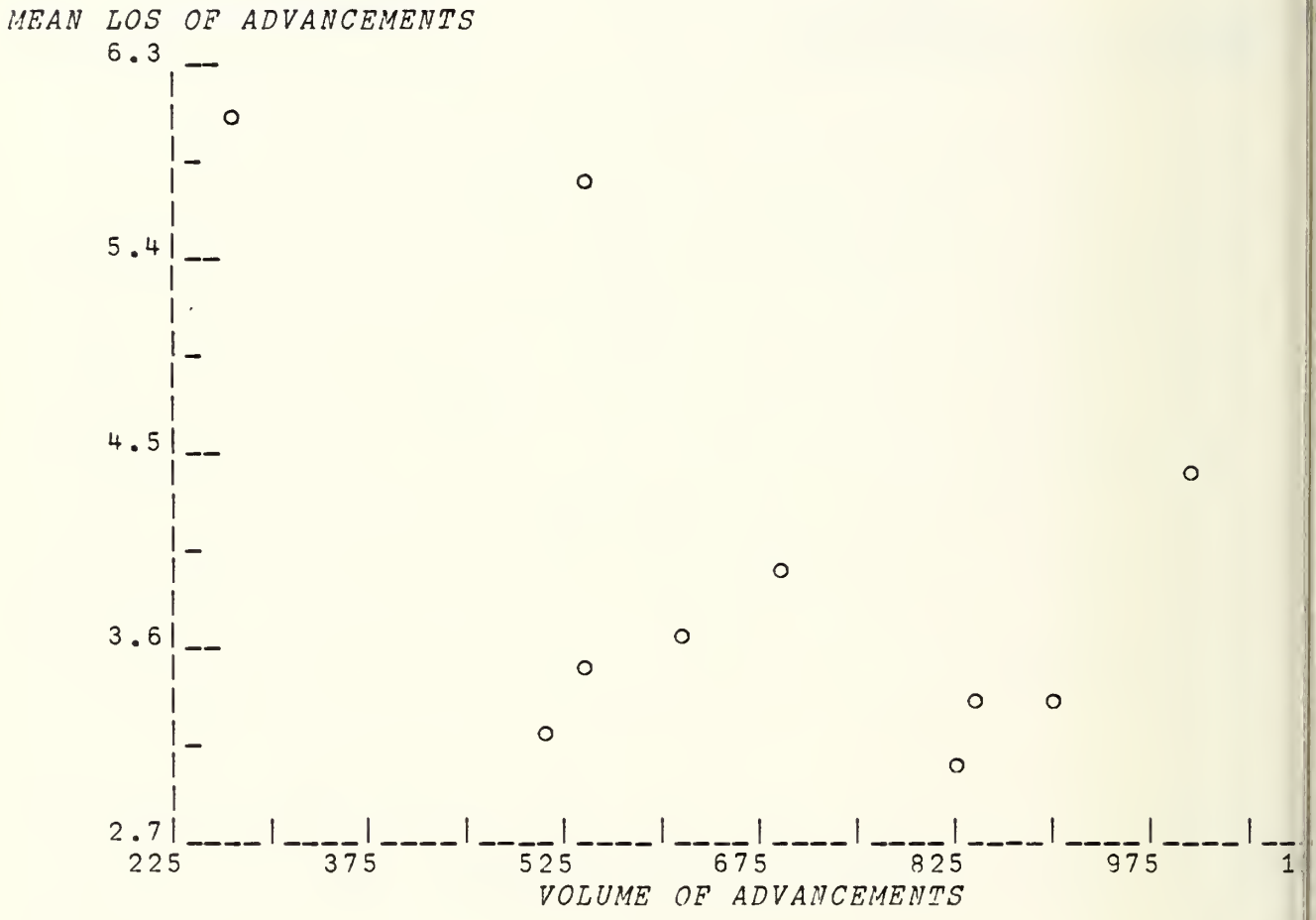
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=1800 PAY GRADE=4



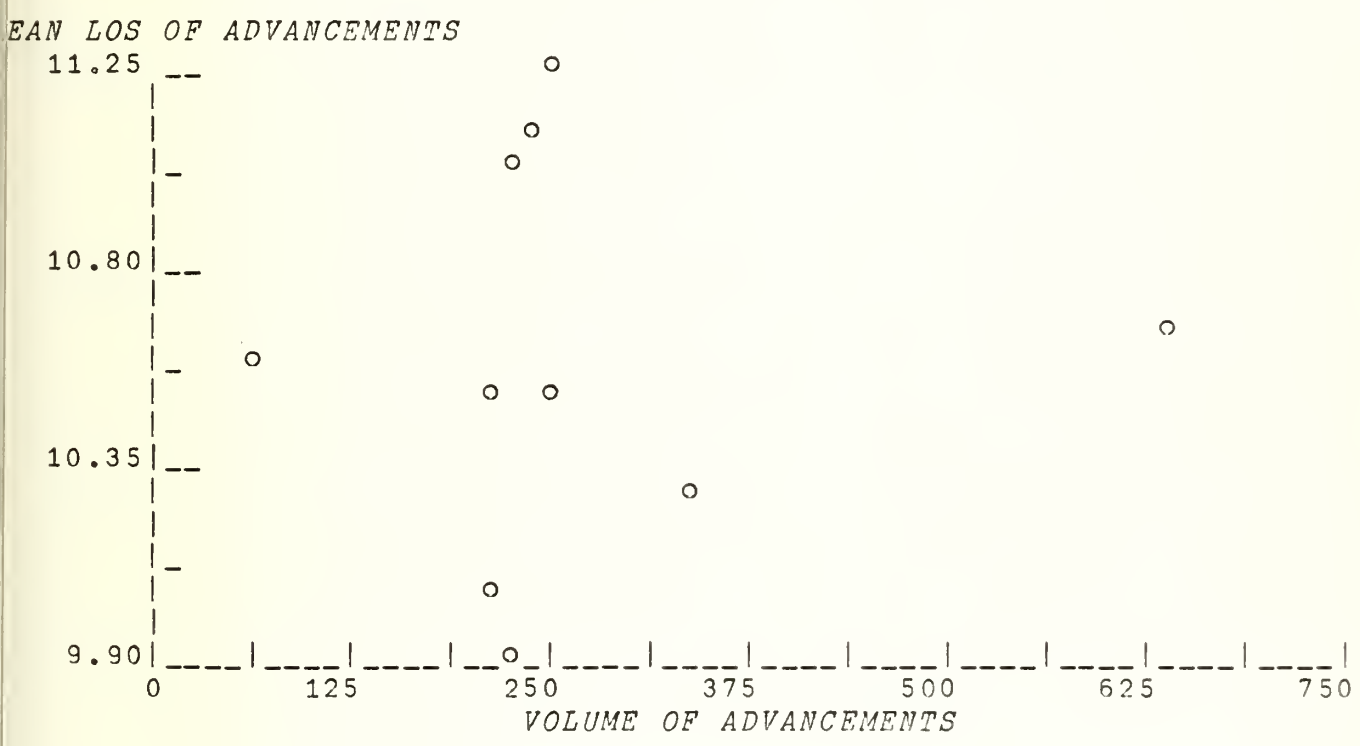
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=1800 PAY GRADE=5



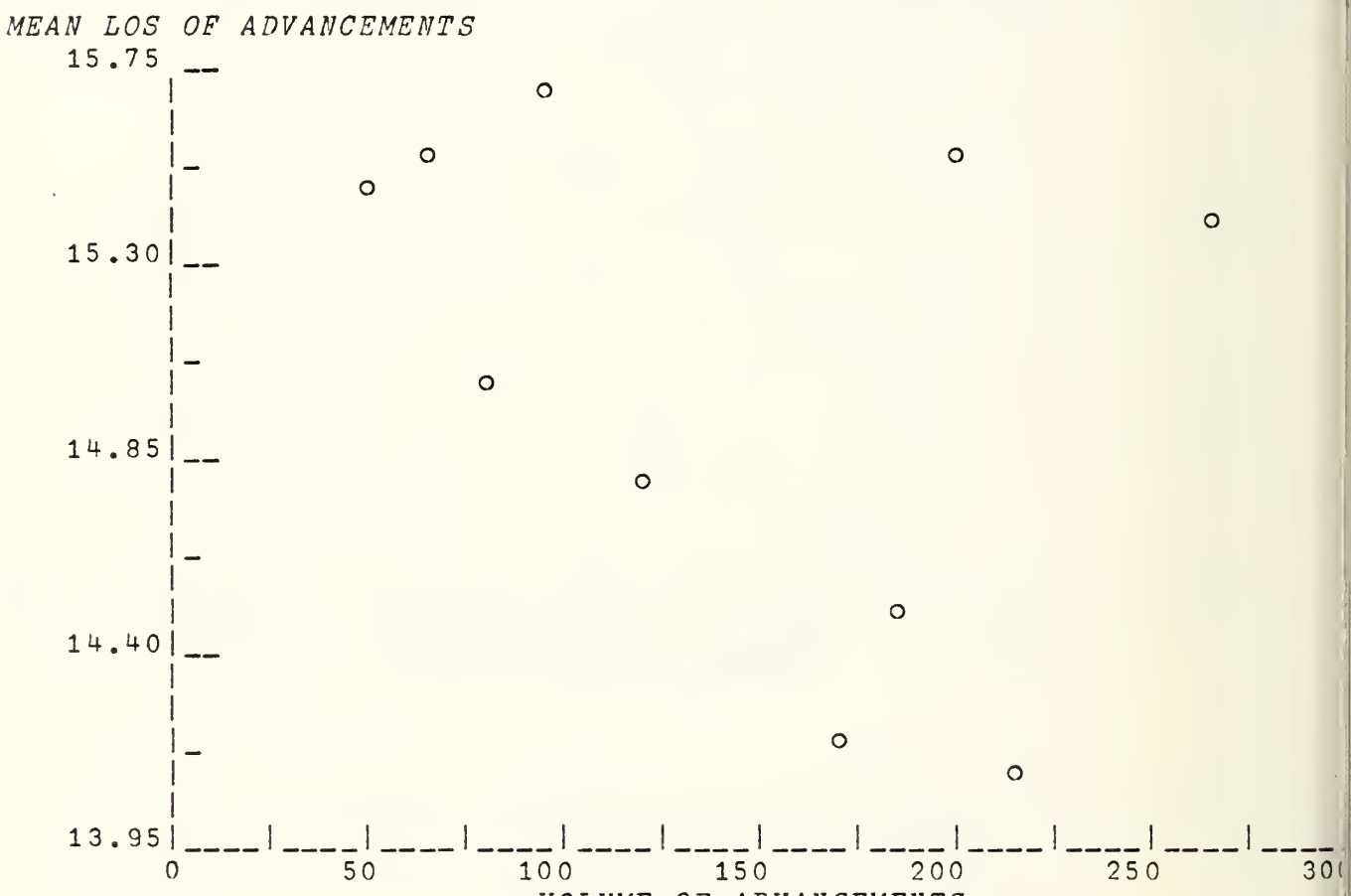
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=1800 PAY GRADE=6



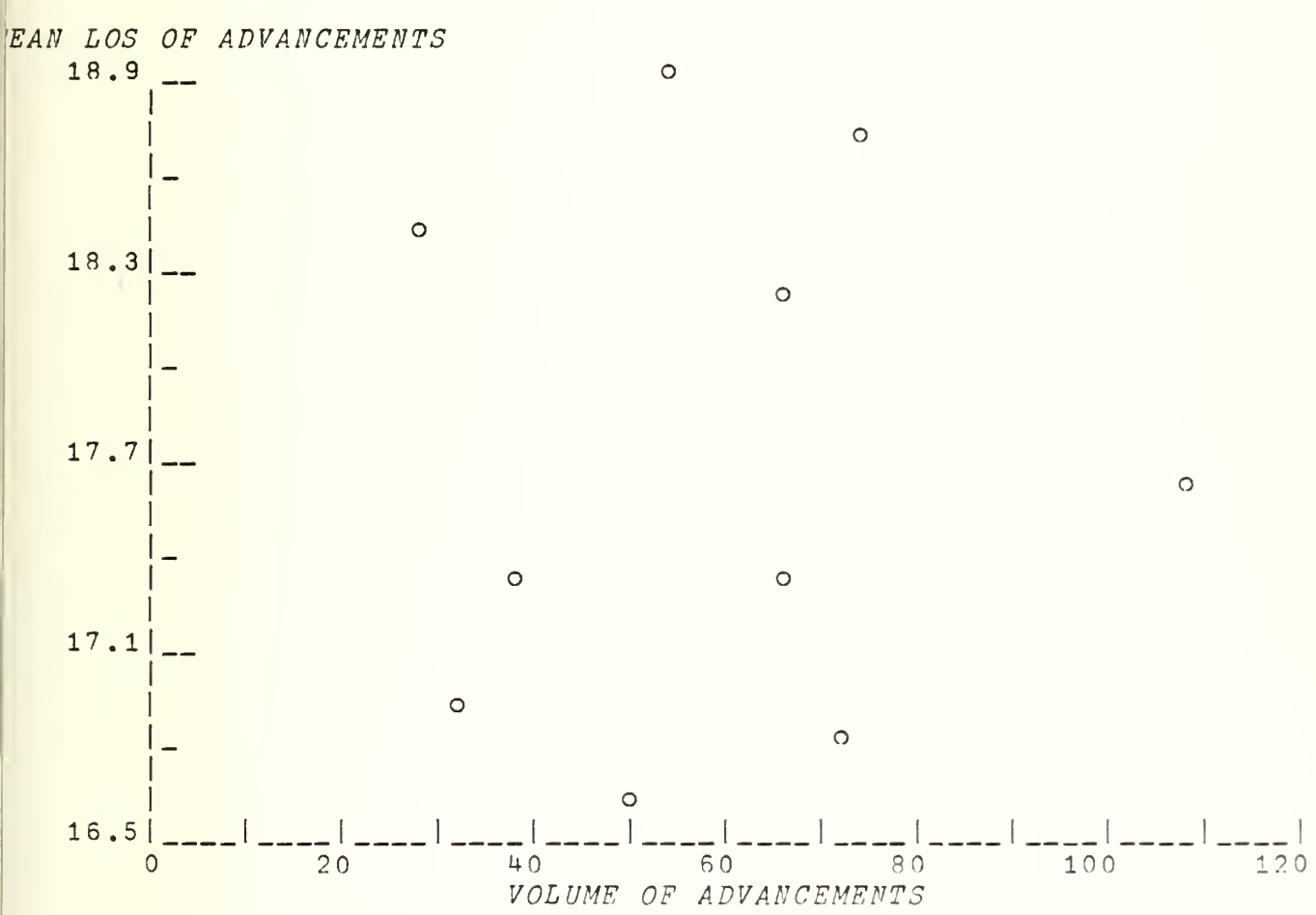
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=1800 PAY GRADE=7



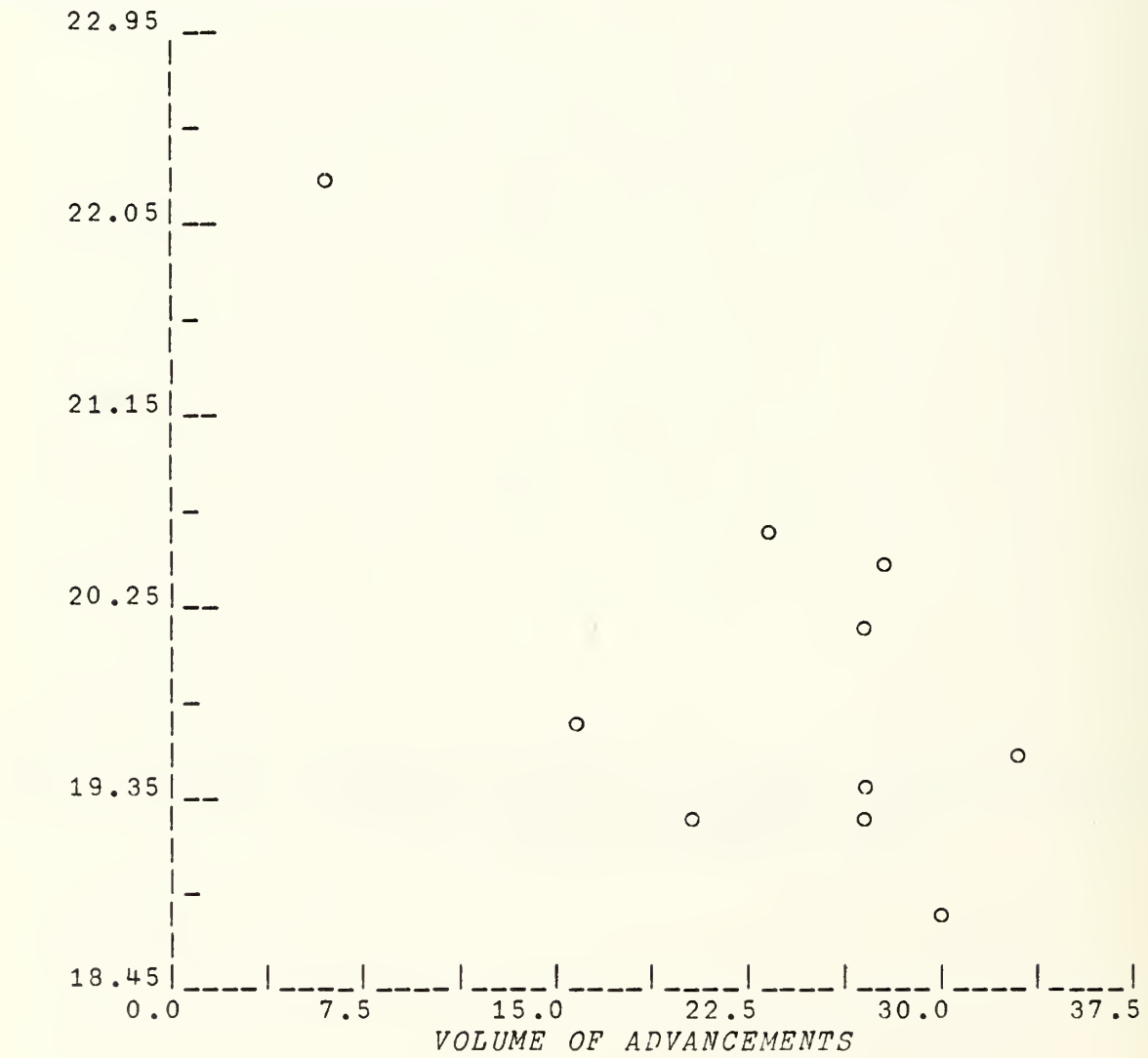
MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=1800 PAY GRADE=8

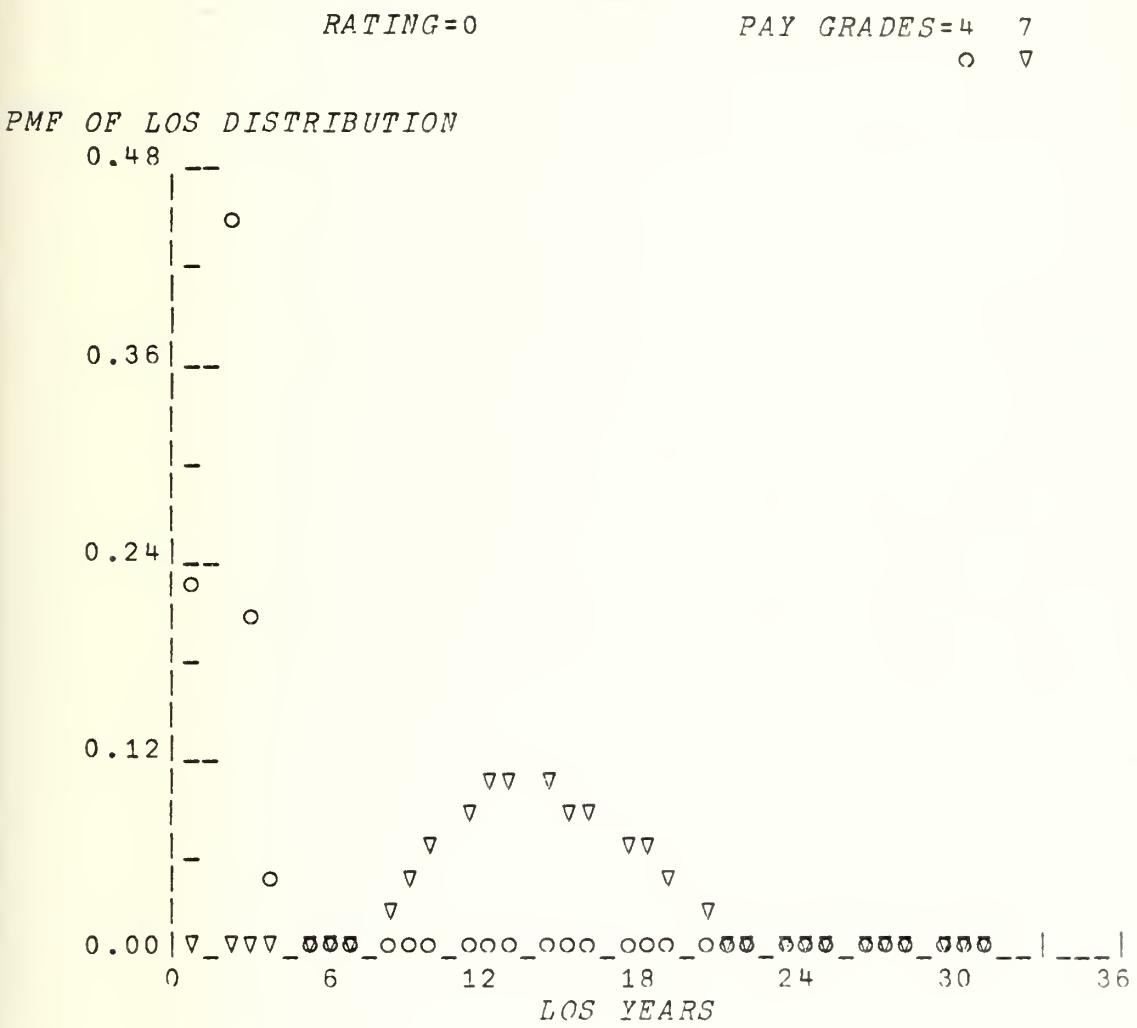


MEAN LOS VALUES VS. VOLUMES OF ADVANCEMENTS DURING 1966-75.

RTG=1800 PAY GRADE=9



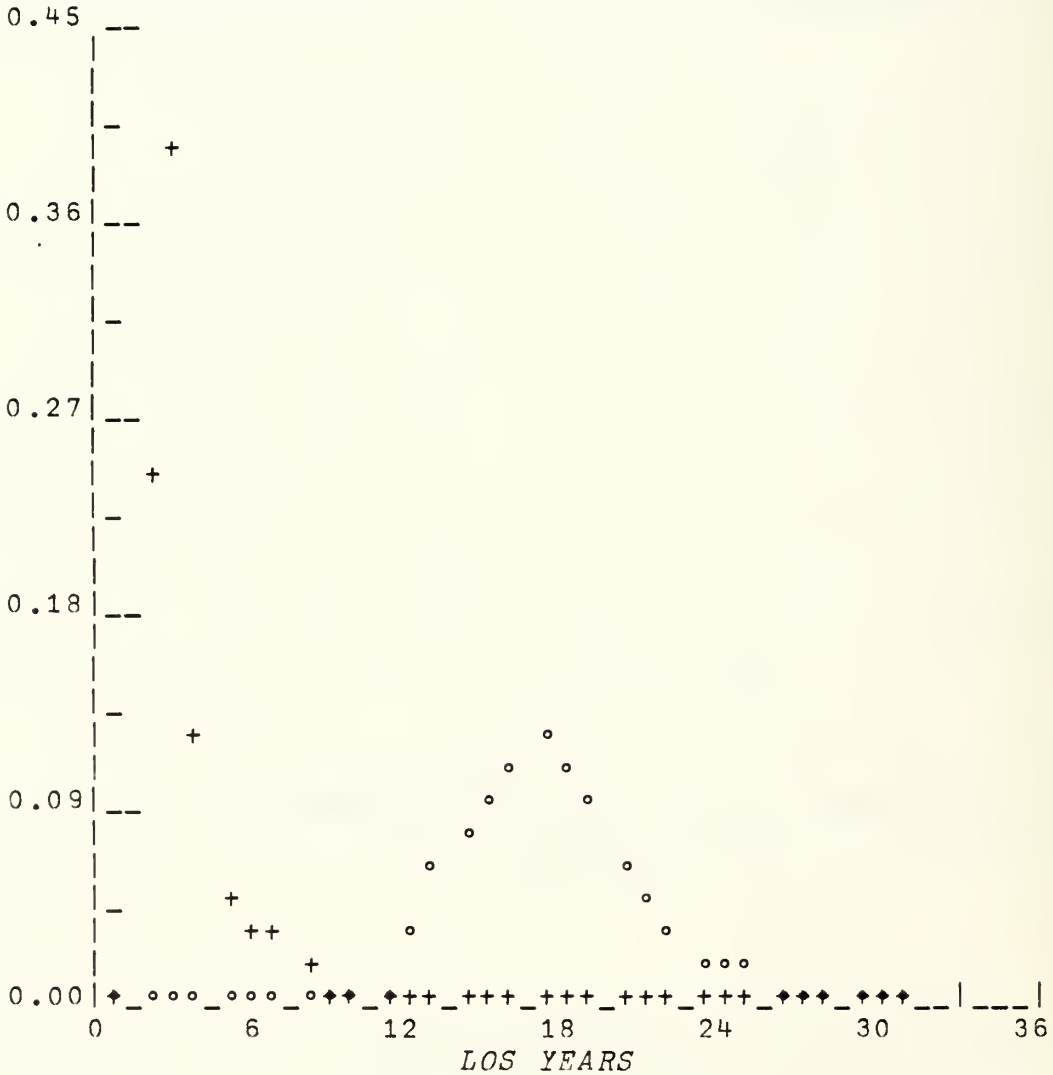
LOS DISTRIBUTION OF AVERAGE NUMBER OF ADVANCEMENTS DURING 1966-74.



LOS DISTRIBUTION OF AVERAGE NUMBER OF ADVANCEMENTS DURING 1966-74.

RATING=0 PAY GRADES=5 8

PMF OF LOS DISTRIBUTION

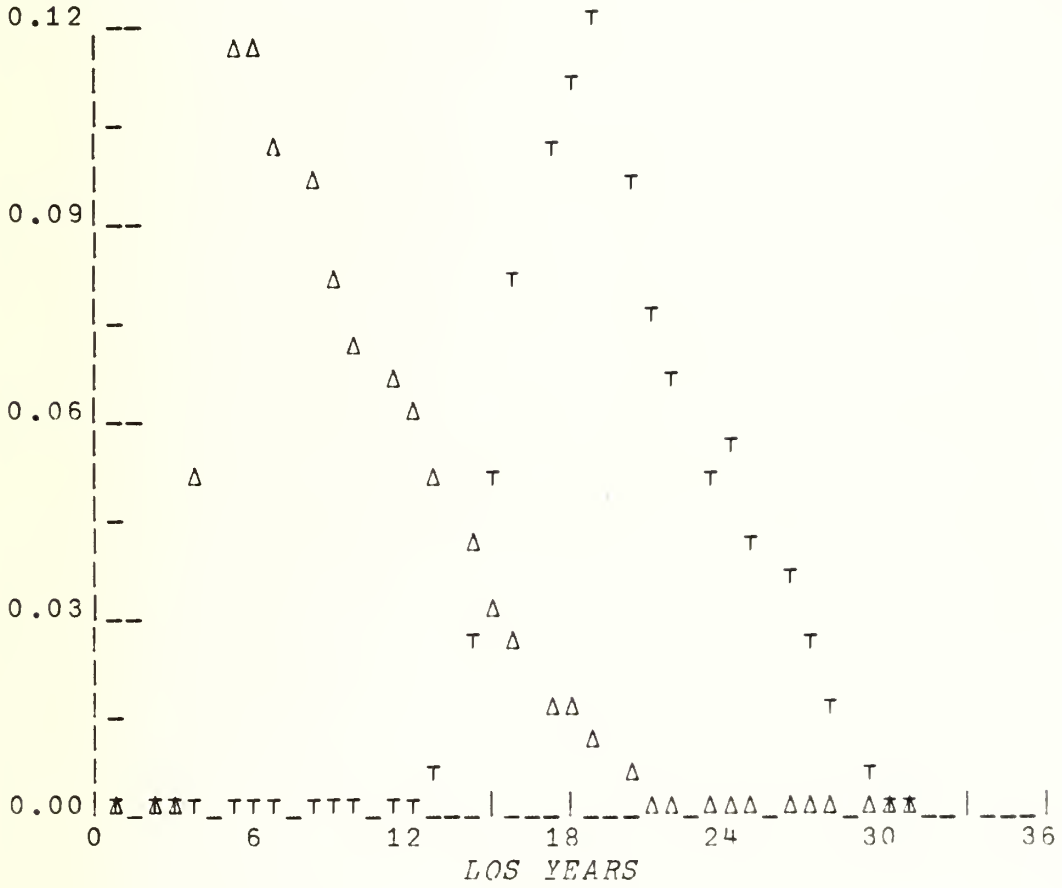


LOS DISTRIBUTION OF AVERAGE NUMBER OF ADVANCEMENTS DURING 1966-74.

RATING=0 PAY GRADES=6 9

Δ T

PMF OF LOS DISTRIBUTION



LOS DISTRIBUTION OF AVERAGE NUMBER OF ADVANCEMENTS DURING 1966-74.

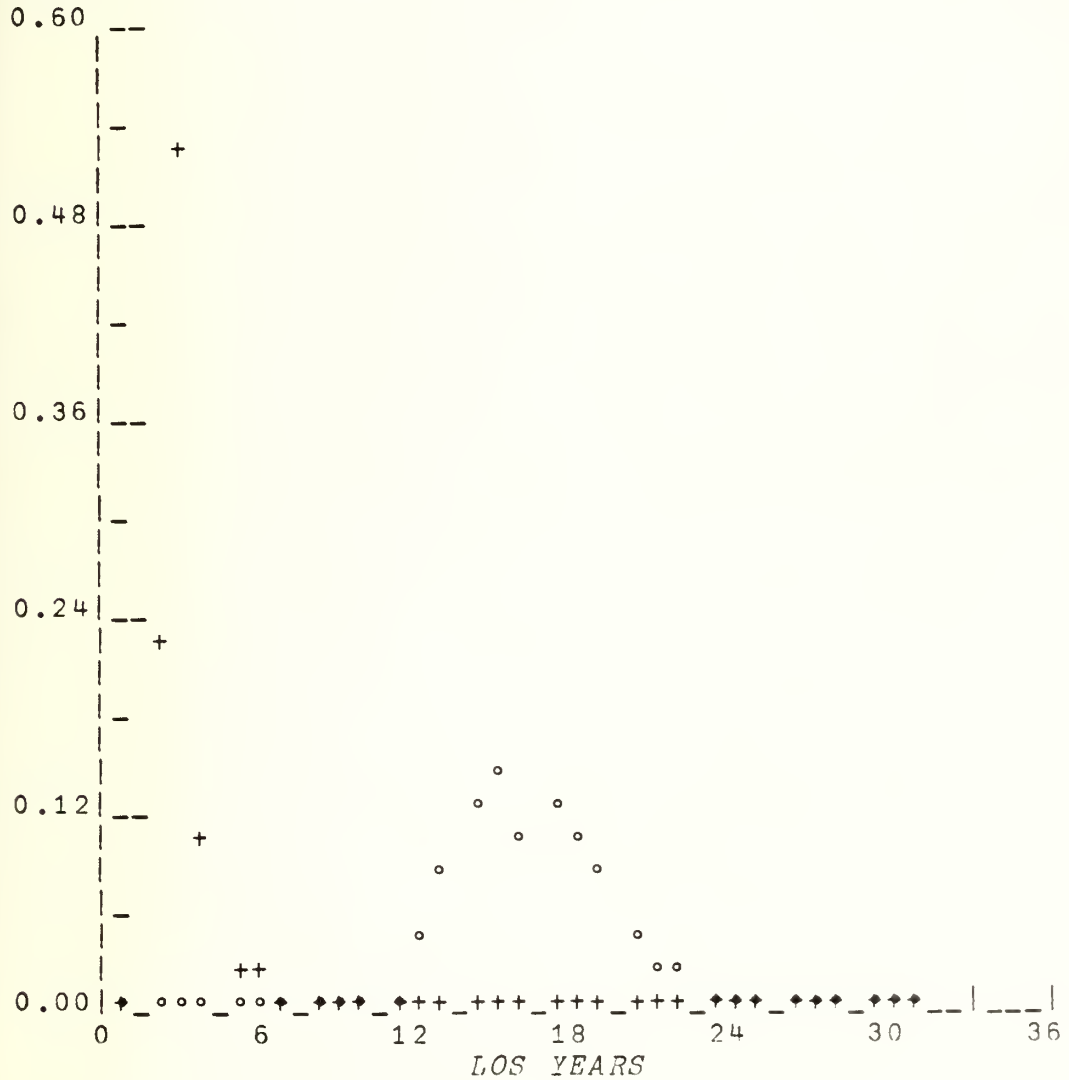
RATING=300 *PAY GRADES*=4 7

PMF OF LOS DISTRIBUTION

OS DISTRIBUTION OF AVERAGE NUMBER OF ADVANCEMENTS DURING 1966-74.

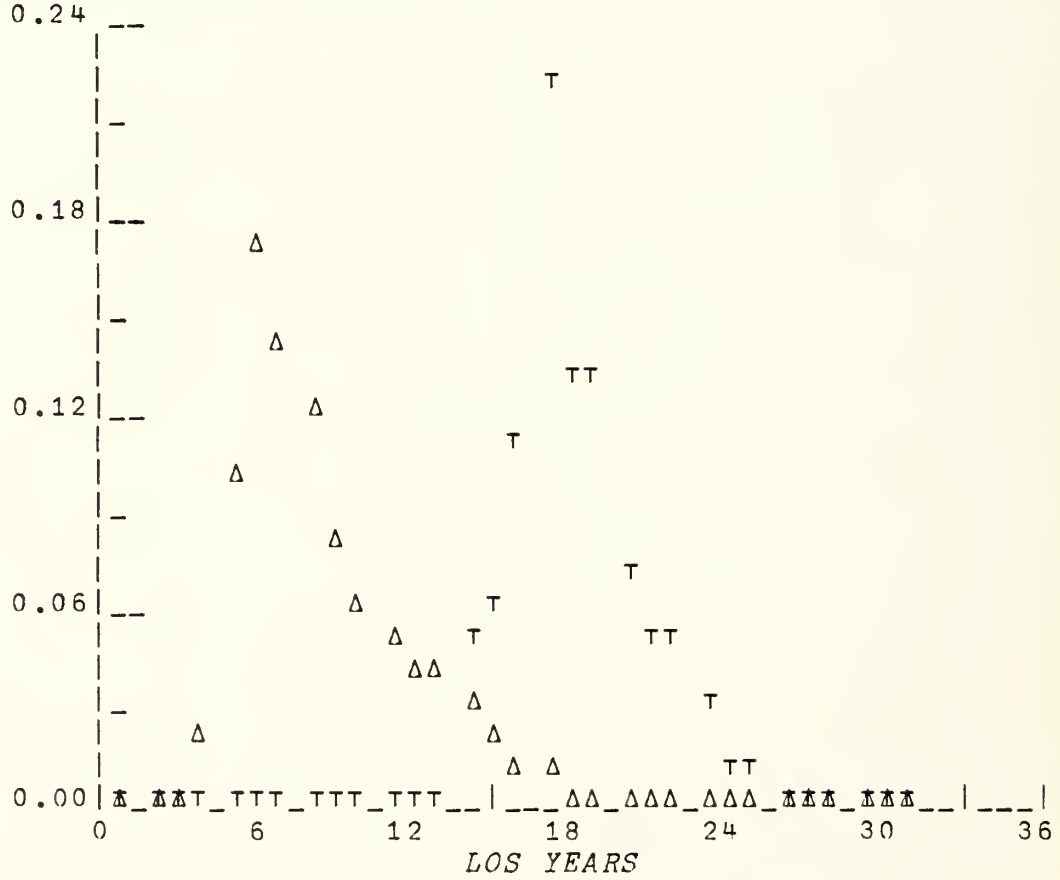
RATING=300 PAY GRADES=5 8

MF OF LOS DISTRIBUTION



LOS DISTRIBUTION OF AVERAGE NUMBER OF ADVANCEMENTS DURING 1966-74.

RATING=300 *PAY GRADES*=6 9

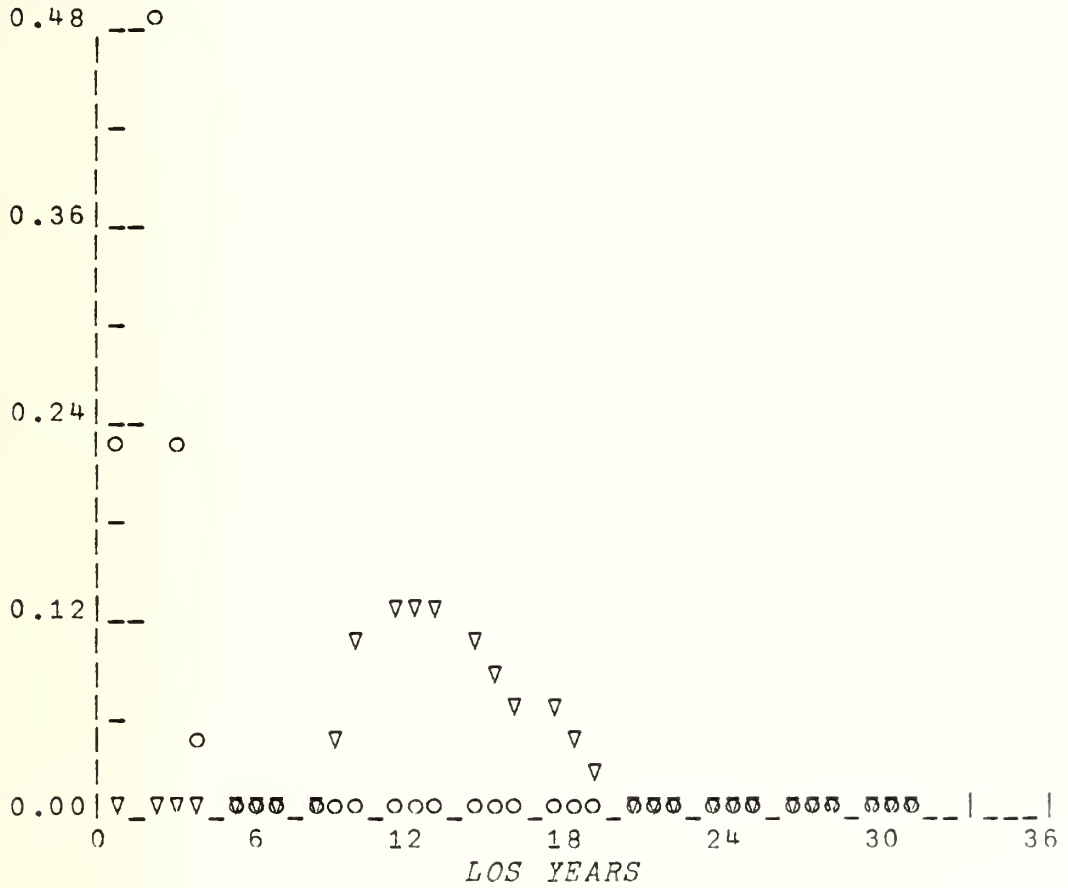


APPENDIX 7 (cont'd)

LOS DISTRIBUTION OF AVERAGE NUMBER OF ADVANCEMENTS DURING 1966-74.

RATING=1500 *PAY GRADES*=4 7

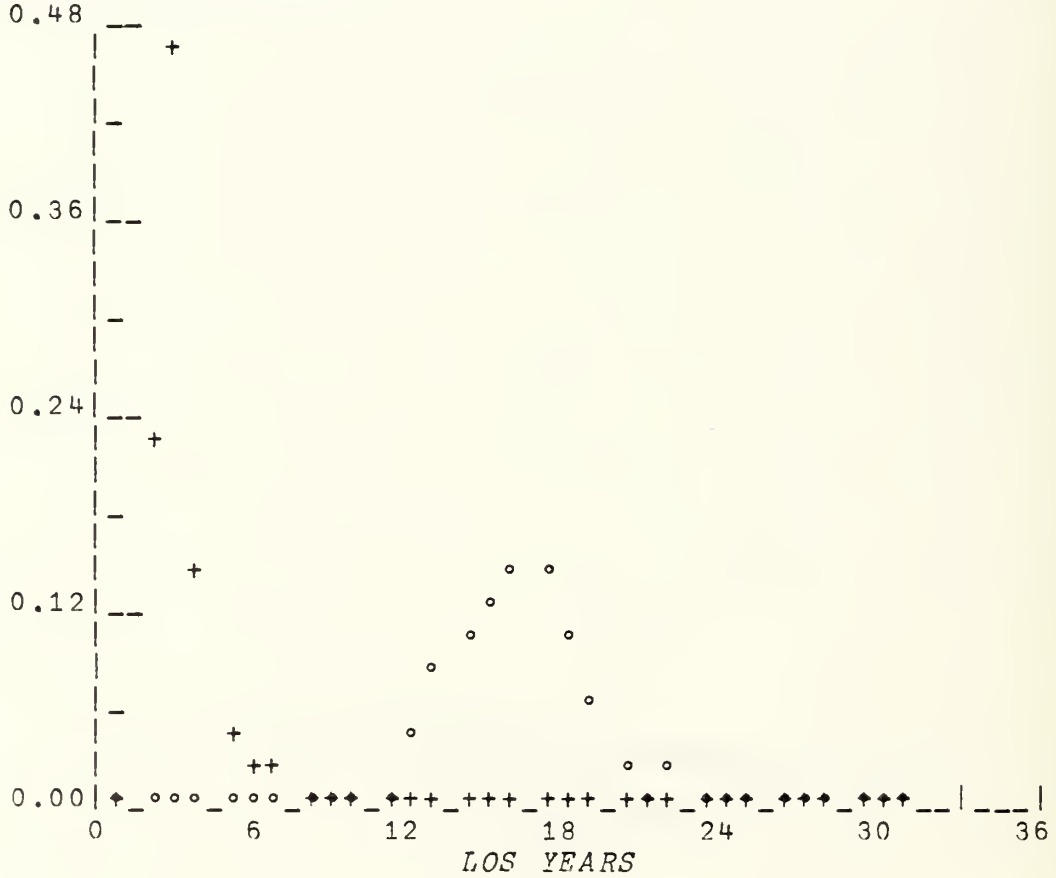
PMF OF LOS DISTRIBUTION



LOS DISTRIBUTION OF AVERAGE NUMBER OF ADVANCEMENTS DURING 1966-74.

RATING=1500 *PAY GRADES*=5 8

PMF OF LOS DISTRIBUTION

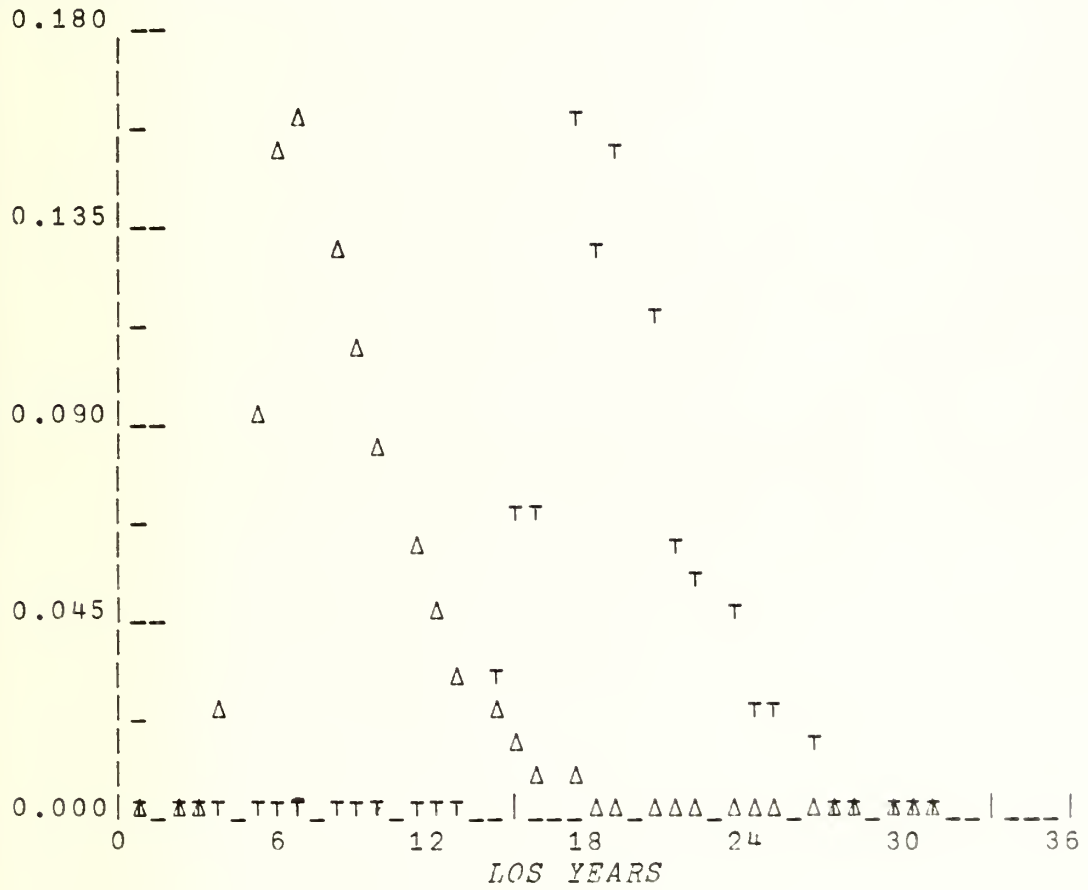


LOS DISTRIBUTION OF AVERAGE NUMBER OF ADVANCEMENTS DURING 1966-74.

RATING=1500 *PAY GRADES*=6 9

Δ T

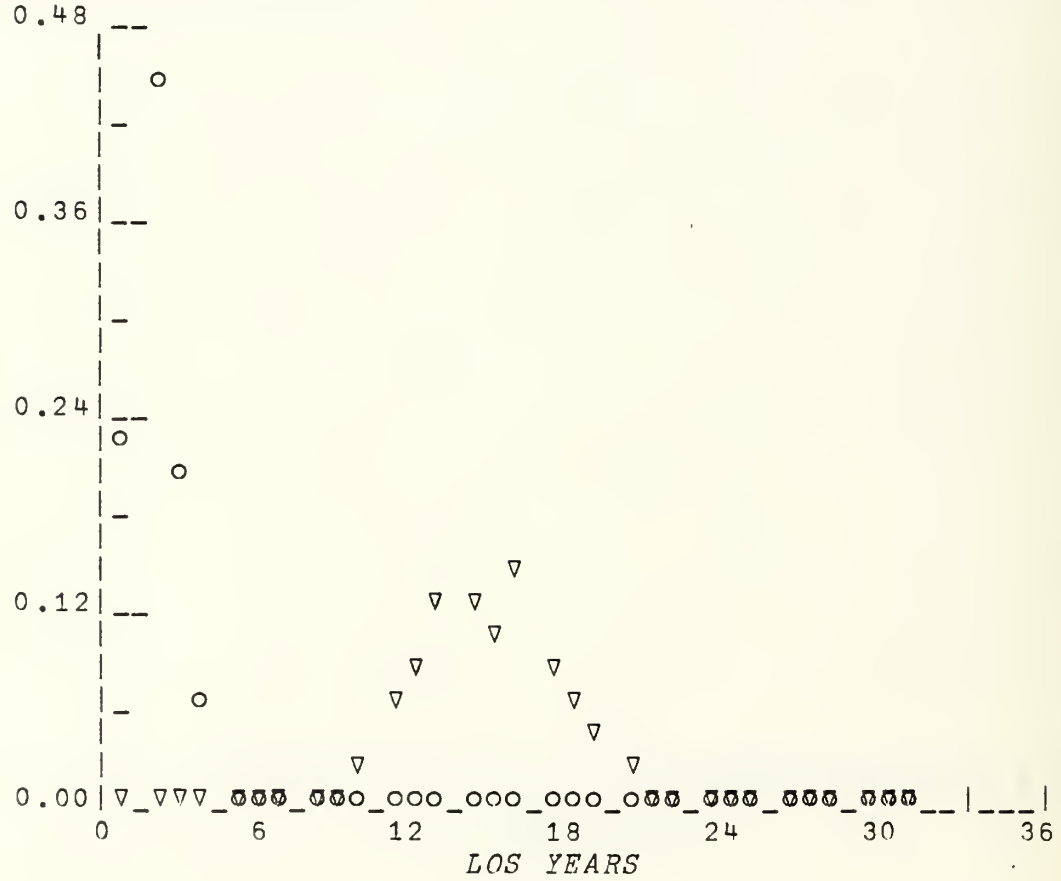
PMF OF LOS DISTRIBUTION



LOS DISTRIBUTION OF AVERAGE NUMBER OF ADVANCEMENTS DURING 1966-74.

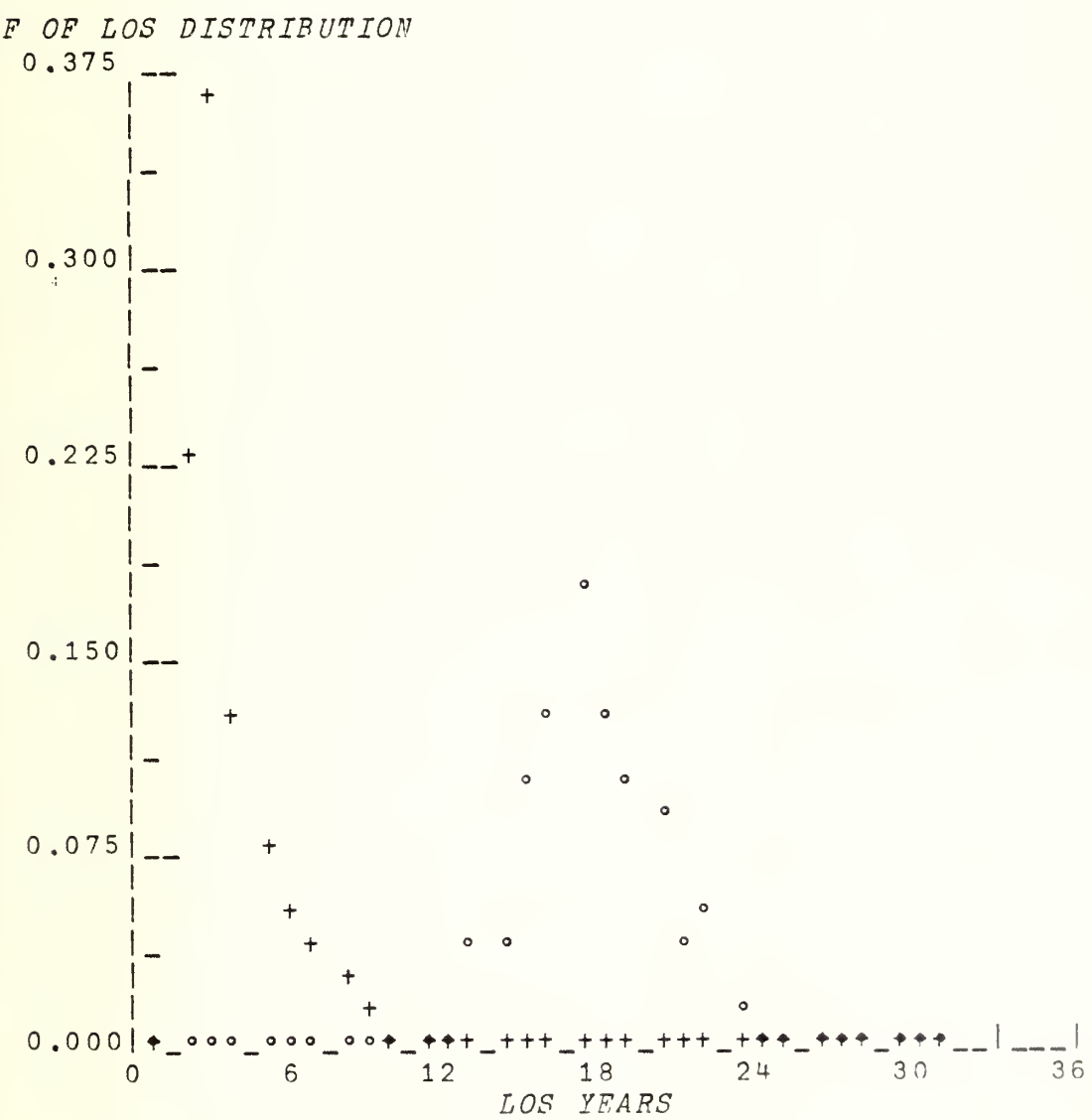
RATING=1800 *PAY GRADES*=4 7

PMF OF LOS DISTRIBUTION



LOS DISTRIBUTION OF AVERAGE NUMBER OF ADVANCEMENTS DURING 1966-74.

RATING=1800 PAY GRADES=5 8

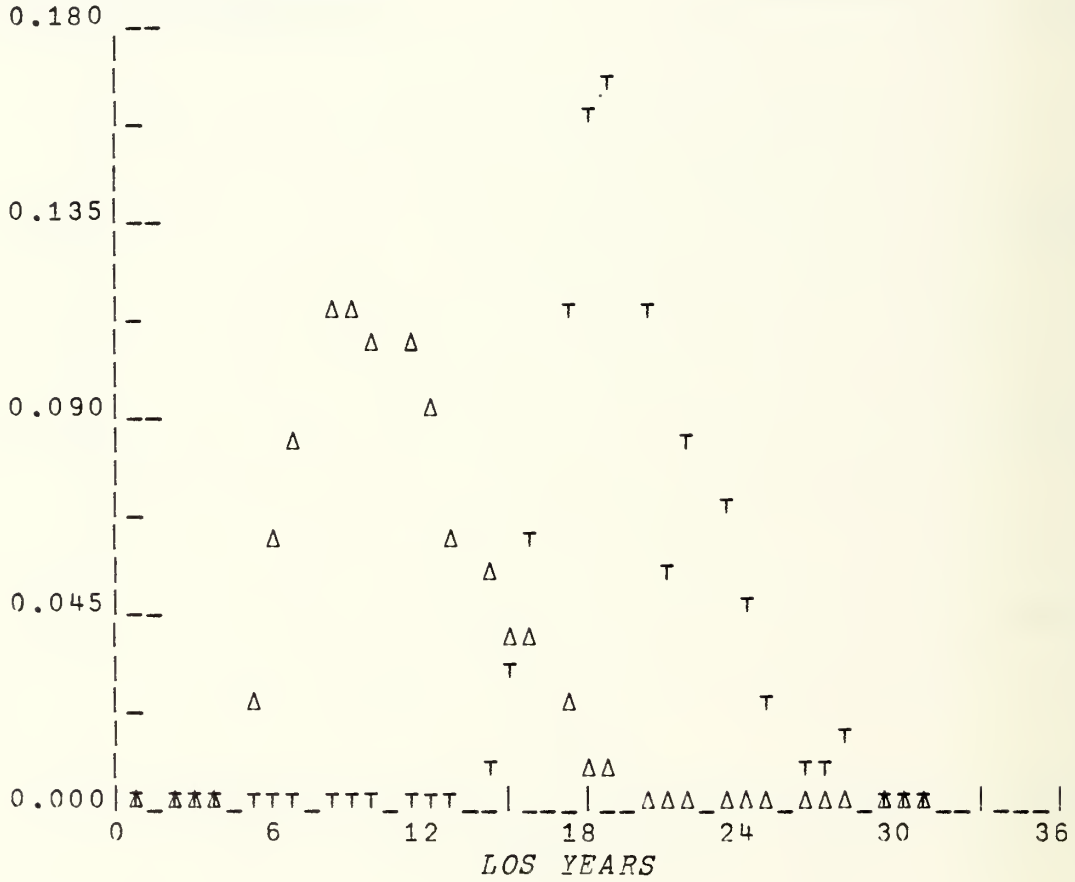


LOS DISTRIBUTION OF AVERAGE NUMBER OF ADVANCEMENTS DURING 1966-74

RATING=1800 PAY GRADES=6 9

Δ T

PMF OF LOS DISTRIBUTION



STEPWISE MULTIPLE REGRESSION OF NUMBER OF TOTAL ADVANCEMENTS IN AN LOS YEAR

PREDICTOR VARIABLE 1: NUMBER OF TESTPASSERS IN SAME LOS YEAR
PREDICTOR VARIABLE 2: VOLUME OF TOTAL ADVANCEMENTS IN PAY GRADE
PREDICTOR VARIABLE 3: INVENTORY IN SAME LOS YEAR

RATING=0 *PAY GRADE=4*

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	*FIRST VAR*	*SEC VAR*	*THIRD VAR*	*PERCENT VOL.ADV.IN 1973*
1	1	2	3	20.00
2	1	2	3	35.89
3	3	2	1	31.23
4	3	2	1	9.20

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 96.32
TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 4 IN YEAR 1975 : 56931

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	*FIRST VAR*	*ADD SEC VAR*	*FIRST 2 VARS*	*ADD THIRD VAR*	*ALL 3 VARS*
1	63.18	0.97	31.96	0.37	19.19
2	46.95	3.46	33.44	3.33	32.05
3	27.07	0.68	13.26	0.04	7.44
4	6.26	1.17	3.80	0.00	2.11

III.CORRESPONDING DEGREES OF FREEDOM:

1 7	1 6	2 6	1 5	3 5

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.59	3.78	3.46	4.06	3.62
0.95	5.59	5.99	5.14	6.61	5.41
0.99	12.20	13.70	10.90	16.30	12.10

APPENDIX 8 (cont'd).

RATING=0 *PAY GRADE*=5

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	*FIRST VAR*	*SEC VAR*	*THIRD VAR*	*PERCENT VOL.ADV.IN* 1973
2	2	3	1	12.81
3	3	2	1	42.91
4	3	1	2	25.43
5	1	2	3	5.98

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 87.14

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 5 *IN YEAR* 1975 : 31657

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	*FIRST VAR*	*ADD SEC VAR*	*FIRST* 2 *VARS*	*ADD THIRD VAR*	*ALL* 3 *VARS*
2	43.54	3.61	31.67	0.31	18.79
3	42.51	0.88	21.33	2.11	17.55
4	5.81	1.86	4.19	0.72	2.90
5	5.37	2.97	4.92	2.82	5.22

III.CORRESPONDING DEGREES OF FREEDOM:

	1 7	1 6	2 6	1 5	3 5

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.59	3.78	3.46	4.06	3.62
0.95	5.59	5.99	5.14	6.61	5.41
0.99	12.20	13.70	10.90	16.30	12.10

RATING=0 PAY GRADE=6

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	FIRST VAR	SEC VAR	THIRD VAR	PERCENT VOL.ADV.IN 1973
5	2	3	1	15.69
6	2	3	1	12.57
7	2	1	3	10.41
8	2	3	1	8.82
9	2	3	1	7.51
10	2	3	1	6.25
11	2	3	1	6.83
12	2	1	3	6.27
13	2	1	3	4.81
14	2	3	1	3.35
17	3	2	1	3.32
18	3	2	1	3.02

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 88.85

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 6 IN YEAR 1975 : 11714

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	FIRST VAR	ADD SEC VAR	FIRST 2 VARS	ADD THIRD VAR	ALL 3 VARS
5	17.47	1.85	10.72	0.08	6.08
6	36.26	2.57	23.49	0.09	13.30
7	373.22	2.57	229.75	0.07	129.55
8	1450.65	5.81	1226.54	0.40	736.05
9	589.71	2.12	343.19	3.74	334.61
10	37.77	30.88	114.93	1.05	77.62
11	23.97	76.23	178.92	3.04	160.83
12	36.30	20.05	77.57	3.25	72.16
13	90.76	8.16	95.87	0.24	55.86
14	63.70	20.13	128.94	1.16	88.64
17	6.52	11.51	13.91	3.42	14.15
18	11.51	28.07	42.05	0.49	25.80

III.CORRESPONDING DEGREES OF FREEDOM:

1 7	1 6	2 6	1 5	3 5

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.59	3.78	3.46	4.06	3.62
0.95	5.59	5.99	5.14	6.61	5.41
0.99	12.20	13.70	10.90	16.30	12.10

RATING=0 PAY GRADE=7

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	FIRST VAR	SEC VAR	THIRD VAR	PERCENT VOL.ADV.IN 1973
9	2	3	1	4.17
10	2	3	1	4.30
11	2	3	1	6.13
12	2	3	1	8.18
13	2	3	1	10.33
14	2	3	1	9.74
15	2	3	1	11.06
16	2	3	1	9.74
17	3	2	1	11.68
18	3	1	2	11.44
19	3	2	1	5.90
20	3	1	2	3.06

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 95.72

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 7 IN YEAR 1975 : 4745

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	FIRST VAR	ADD SEC VAR	FIRST 2 VARS	ADD THIRD VAR	ALL 3 VARS
9	31.66	3.97	24.52	0.09	13.91
10	75.94	4.64	60.04	0.52	37.03
11	87.18	4.43	67.18	0.61	42.11
12	72.85	91.87	555.20	2.78	480.80
13	46.06	50.22	210.08	0.00	116.81
14	28.05	30.08	87.34	0.59	54.43
15	16.65	20.25	41.34	3.00	37.77
16	6.58	31.19	33.06	0.00	18.37
17	2.13	26.42	18.14	21.12	59.67
18	3.10	8.60	7.53	2.80	7.46
19	11.13	15.17	24.41	4.63	27.66
20	44.90	14.68	73.67	8.04	109.43

III.CORRESPONDING DEGREES OF FREEDOM:

1 7	1 6	2 6	1 5	3 5

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.59	3.78	3.46	4.06	3.62
0.95	5.59	5.99	5.14	6.61	5.41
0.99	12.20	13.70	10.90	16.30	12.10

RATING=0 PAY GRADE=8

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	FIRST VAR	SEC VAR	THIRD VAR	PERCENT VOL.ADV.IN 1973
13	2	3	1	6.82
14	2	1	3	8.33
15	2	3	1	10.58
16	2	3	1	11.65
17	3	2	1	15.59
18	1	2	3	16.62
19	3	2	1	10.72
20	3	2	1	5.46
21	3	2	1	4.19

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 89.96

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 8 IN YEAR 1975 : 2052

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	FIRST VAR	ADD SEC VAR	FIRST 2 VARS	ADD THIRD VAR	ALL 3 VARS
13	75.53	0.71	35.91	0.14	18.81
14	7.55	6.76	11.51	0.05	5.86
15	2.77	5.55	5.43	0.01	2.73
16	10.78	18.55	33.58	0.26	18.35
17	13.26	33.69	66.83	0.69	41.35
18	1.82	2.97	2.76	4.43	4.89
19	5.38	1.34	3.54	0.01	1.78
20	5.51	47.54	52.15	1.60	40.49
21	12.23	4.16	12.07	0.09	6.25

III.CORRESPONDING DEGREES OF FREEDOM:

1 5	1 4	2 4	1 3	3 3

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	4.06	4.54	4.32	5.54	5.39
0.95	6.61	7.71	6.94	10.10	9.28
0.99	16.30	21.20	18.00	34.10	29.50

RATING=0 PAY GRADE=9

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	FIRST VAR	SEC VAR	THIRD VAR	PERCENT VOL.ADV.IN 1973
15	3	2	1	4.34
16	3	2	1	8.05
17	3	2	1	11.88
18	2	3	1	14.43
19	3	2	1	12.13
20	2	3	1	7.66
21	3	2	1	10.98
22	3	2	1	4.47
24	2	3	1	3.58
25	2	3	1	3.45
26	2	1	3	3.07

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 84.04

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 9 IN YEAR 1975 : 783

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	FIRST VAR	ADD SEC VAR	FIRST 2 VARS	ADD THIRD VAR	ALL 3 VARS
15	5.45	4.18	6.55	0.12	3.44
16	21.17	18.04	55.68	0.04	28.27
17	21.73	72.23	201.79	3.01	203.12
18	3.18	31.61	27.13	2.26	24.54
19	10.13	16.82	29.50	29.73	170.86
20	7.54	20.65	28.93	0.07	14.81
21	5.49	157.44	167.28	0.80	106.13
22	8.32	20.67	30.85	5.04	43.01
24	11.60	13.50	27.03	1.79	22.19
25	3.54	6.48	6.95	10.67	19.41
26	51.64	8.02	66.10	0.72	41.25

III.CORRESPONDING DEGREES OF FREEDOM:

1 5	1 4	2 4	1 3	3 3

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	4.06	4.54	4.32	5.54	5.39
0.95	6.61	7.71	6.94	10.10	9.28

APPENDIX 8 (cont'd).

STEPWISE MULTIPLE REGRESSION OF NUMBER OF TOTAL ADVANCEMENTS IN AN LOS YEAR ON THREE PREDICTOR VARIABLES.

PREDICTOR VARIABLE 1: NUMBER OF TESTPASSERS IN SAME LOS YEAR
PREDICTOR VARIABLE 2: VOLUME OF TOTAL ADVANCEMENTS IN PAY GRADE
PREDICTOR VARIABLE 3: INVENTORY IN SAME LOS YEAR

RATING=300 PAY GRADE=4

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	FIRST VAR	SEC VAR	THIRD VAR	PERCENT VOL.ADV.IN 1973
1	1	2	3	10.76
2	1	2	3	37.61
3	3	2	1	43.41
4	3	1	2	6.87

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 98.65
TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 4 IN YEAR 1975 : 1412

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	FIRST VAR	ADD SEC VAR	FIRST 2 VARS	ADD THIRD VAR	ALL 3 VARS
1	61.38	2.74	39.68	10.19	70.37
2	26.56	12.36	41.02	0.12	23.40
3	46.22	21.34	100.94	2.57	85.77
4	36.26	1.73	20.88	0.50	12.93

III.CORRESPONDING DEGREES OF FREEDOM:

1 7	1 6	2 6	1 5	3 5

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.59	3.78	3.46	4.06	3.62
0.95	5.59	5.99	5.14	6.61	5.41
0.99	12.20	13.70	10.90	16.30	12.10

APPENDIX 8 (cont'd).

RATING=300 *PAY GRADE*=5

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	*FIRST VAR*	*SEC VAR*	*THIRD VAR*	*PERCENT VOL.ADV.IN* 1973
2	1	3	2	9.21
3	3	1	2	54.32
4	3	1	2	28.38

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 91.92

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 5 *IN YEAR* 1975 : 532

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	*FIRST VAR*	*ADD SEC VAR*	*FIRST* 2 *VARS*	*ADD THIRD VAR*	*ALL* 3 *VARS*
2	46.16	0.63	22.16	0.01	12.33
3	35.48	8.63	41.40	9.89	71.78
4	12.81	0.81	6.63	0.58	4.30

III.CORRESPONDING DEGREES OF FREEDOM:

	1 7	1 6	2 6	1 5	3 5

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.59	3.78	3.46	4.06	3.62
0.95	5.59	5.99	5.14	6.61	5.41
0.99	12.20	13.70	10.90	16.30	12.10

RATING=300 *PAY GRADE*=6

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	*FIRST VAR*	*SEC VAR*	*THIRD VAR*	*PERCENT VOL.ADV.IN* 1973
4	2	1	3	3.39
5	2	1	3	13.56
6	2	1	3	13.56
7	2	3	1	8.47
8	1	2	3	15.82
9	2	1	3	7.34
10	1	3	2	5.08
11	1	3	2	8.47
12	1	3	2	5.08
14	1	3	2	3.39
15	1	3	2	4.52

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 88.7

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 6 *IN YEAR* 1975 : 177

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	*FIRST VAR*	*ADD SEC VAR*	*FIRST* 2 *VARS*	*ADD THIRD VAR*	*ALL* 3 *VARS*
4	19.45	10.99	29.10	0.41	17.63
5	15.59	0.81	7.99	0.01	4.45
6	174.82	2.75	110.58	0.00	61.46
7	33.87	13.29	53.31	0.00	29.63
8	31.75	2.16	19.59	0.07	11.05
9	56.62	4.02	42.51	0.00	23.62
10	79.16	1.61	43.82	0.06	24.64
11	27.79	5.15	24.72	0.53	15.36
12	139.66	2.83	89.49	0.36	53.44
14	108.91	0.74	52.84	0.17	30.40
15	38.90	1.23	20.69	1.02	14.18

III.CORRESPONDING DEGREES OF FREEDOM:

	1 7	1 6	2 6	1 5	3 5

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.59	3.78	3.46	4.06	3.62
0.95	5.59	5.99	5.14	6.61	5.41
0.99	12.20	13.70	10.90	16.30	12.10

RATING=300 PAY GRADE=7

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	FIRST VAR	SEC VAR	THIRD VAR	PERCENT VOL.ADV.IN 1973
10	1	2	3	3.57
11	2	3	1	5.95
12	2	1	3	11.90
13	2	3	1	7.14
14	2	1	3	16.67
15	2	1	3	17.86
16	2	3	1	10.71
17	3	2	1	3.57
18	3	2	1	9.52
19	3	1	2	3.57
20	2	3	1	3.57

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 94.05

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 7 IN YEAR 1975 : 84

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	FIRST VAR	ADD SEC VAR	FIRST 2 VARS	ADD THIRD VAR	ALL 3 VARS
10	16.72	0.88	8.65	0.00	4.81
11	9.84	15.79	23.21	0.06	13.06
12	30.13	3.52	22.25	0.00	12.37
13	63.52	41.08	234.17	4.94	260.37
14	14.45	3.38	11.37	0.28	6.76
15	4.41	0.33	2.16	0.48	1.48
16	28.51	5.80	26.93	0.00	14.97
17	8.05	7.76	11.80	0.18	6.85
18	4.32	0.44	2.21	0.18	1.33
19	55.71	0.08	24.24	0.01	13.49
20	3.48	1.53	2.64	0.54	1.80

III.CORRESPONDING DEGREES OF FREEDOM:

1 7	1 6	2 6	1 5	3 5

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.59	3.78	3.46	4.06	3.62
0.95	5.59	5.99	5.14	6.61	5.41
0.99	12.20	13.70	10.90	16.30	12.10

APPENDIX 8 (cont'd).

APPENDIX 8 (cont'd).

RATING=300 *PAY GRADE*=8

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	*FIRST VAR*	*SEC VAR*	*THIRD VAR*	*PERCENT VOL.ADV.IN* 1973
13	3	2	1	16.67
14	2	1	3	16.67
15	2	3	1	16.67
16	2	3	1	11.11
17	2	3	1	5.56
18	2	3	1	5.56
19	2	3	1	5.56
20	2	1	3	5.56
21	3	2	1	5.56
22	1	2	3	5.56
25	1	2	3	5.56

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 100

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 8 IN YEAR 1975 : 18

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	*FIRST VAR*	*ADD SEC VAR*	*FIRST 2 VARS*	*ADD THIRD VAR*	*ALL 3 VARS*
13	6.29	6.74	10.12	0.62	6.31
14	6.78	0.02	2.73	0.00	1.37
15	3.78	6.79	7.48	0.03	3.78
16	57.82	0.30	25.01	0.51	14.78
17	42.27	5.45	42.66	0.00	21.36
18	3.82	0.36	1.85	4.08	3.54
19	4.64	1.47	3.27	0.10	1.72
20	1.41	0.82	1.09	0.17	0.63
21	2.90	1.62	2.44	0.06	1.27
22	5.48	0.58	2.80	0.04	1.43
25	1.00	1.00	1.00	1.00	1.00

III.CORRESPONDING DEGREES OF FREEDOM:

	1 5	1 4	2 4	1 3	3 3

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	4.06	4.54	4.32	5.54	5.39
0.95	6.61	7.71	6.94	10.10	9.28
0.99	16.30	21.20	18.00	34.10	29.50

RATING=300 PAY GRADE=9

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	FIRST VAR	SEC VAR	THIRD VAR	PERCENT VOL.ADV.IN 1973
17	2	1	3	50.00
19	2	1	3	50.00

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 100

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 9 IN YEAR 1975 : 2

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	FIRST VAR	ADD SEC VAR	FIRST 2 VARS	ADD THIRD VAR	ALL 3 VARS
17	8.57	0.97	4.75	6.23	9.38
19	4.40	1.42	3.10	0.07	1.61

III.CORRESPONDING DEGREES OF FREEDOM:

	1 5	1 4	2 4	1 3	3 3

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	4.06	4.54	4.32	5.54	5.39
0.95	6.61	7.71	6.94	10.10	9.28
0.99	16.30	21.20	18.00	34.10	29.50

STEPWISE MULTIPLE REGRESSION OF NUMBER OF TOTAL ADVANCEMENTS IN AN LOS YEAR ON THREE PREDICTOR VARIABLES.

PREDICTOR VARIABLE 1: NUMBER OF TESTPASSERS IN SAME LOS YEAR
PREDICTOR VARIABLE 2: VOLUME OF TOTAL ADVANCEMENTS IN PAY GRADE
PREDICTOR VARIABLE 3: INVENTORY IN SAME LOS YEAR

RATING=1500 PAY GRADE=4

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	FIRST VAR	SEC VAR	THIRD VAR	PERCENT VOL.ADV.IN 1973
1	1	2	3	18.41
2	1	2	3	33.30
3	3	2	1	37.66
4	3	2	1	9.01

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 98.38
TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 4 IN YEAR 1975 : 2775

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	FIRST VAR	ADD SEC VAR	FIRST 2 VARS	ADD THIRD VAR	ALL 3 VARS
1	26.49	4.56	22.28	0.59	14.03
2	9.71	7.81	13.48	0.08	7.64
3	105.90	2.40	64.76	0.62	40.64
4	28.91	0.89	14.66	0.82	9.75

III.CORRESPONDING DEGREES OF FREEDOM:

	1 7	1 6	2 6	1 5	3 5

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.59	3.78	3.46	4.06	3.62
0.95	5.59	5.99	5.14	6.61	5.41
0.99	12.20	13.70	10.90	16.30	12.10

APPENDIX 8 (cont'd).

RATING=1500 *PAY GRADE*=5

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	*FIRST VAR*	*SEC VAR*	*THIRD VAR*	*PERCENT VOL.ADV.IN* 1973
2	1	2	3	8.71
3	1	2	3	54.44
4	1	3	2	28.88

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 92.03

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 5 *IN YEAR* 1975 : 1205

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	*FIRST VAR*	*ADD SEC VAR*	*FIRST* 2 *VARS*	*ADD THIRD VAR*	*ALL* 3 *VARS*
2	10.19	4.77	10.22	0.55	6.48
3	17.04	13.52	30.52	1.64	23.07
4	4.13	1.08	2.63	1.08	2.13

III.CORRESPONDING DEGREES OF FREEDOM:

	1 7	1 6	2 6	1 5	3 5

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.59	3.78	3.46	4.06	3.62
0.95	5.59	5.99	5.14	6.61	5.41
0.99	12.20	13.70	10.90	16.30	12.10

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	*FIRST VAR*	*SEC VAR*	*THIRD VAR*	*PERCENT VOL.ADV.IN* 1973
4	2	1	3	6.54
6	2	1	3	5.14
7	2	3	1	12.15
8	2	3	1	13.55
9	2	3	1	11.21
10	2	3	1	10.75
11	2	3	1	9.35
12	2	3	1	7.01
13	2	3	1	6.07
14	2	3	1	4.21
15	2	3	1	3.27
16	2	1	3	3.74

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 92.99

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 6 *IN YEAR* 1975 : 214

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	*FIRST VAR*	*ADD SEC VAR*	*FIRST 2 VARS*	*ADD THIRD VAR*	*ALL 3 VARS*
4	6.34	1.55	4.19	0.69	2.88
6	440.13	1.28	229.39	0.05	128.69
7	131.19	3.91	94.84	1.16	65.29
8	72.77	9.02	82.59	0.01	45.98
9	203.82	0.29	91.75	0.27	53.79
10	77.81	3.18	52.59	1.36	37.60
11	163.53	0.49	76.05	0.18	43.86
12	86.36	0.69	41.62	0.07	23.49
13	33.95	2.14	20.81	0.11	11.85
14	32.07	0.23	14.37	0.01	8.00
15	14.99	4.46	13.43	0.01	7.48
16	5.15	1.46	3.47	0.14	2.03

III.CORRESPONDING DEGREES OF FREEDOM:

1 7	1 6	2 6	1 5	3 5

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.59	3.78	3.46	4.06	3.62
0.95	5.59	5.99	5.14	6.61	5.41
0.99	12.20	13.70	10.90	16.30	12.10

RATING=1500 PAY GRADE=7

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	FIRST VAR	SEC VAR	THIRD VAR	PERCENT VOL.ADV.IN 1973
11	2	3	1	6.09
12	2	1	3	9.57
13	2	3	1	9.57
14	2	3	1	9.57
15	3	1	2	13.91
16	3	2	1	14.78
17	3	2	1	14.78
18	3	1	2	6.96
19	3	1	2	6.09
20	3	2	1	3.48

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 94.78

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 7 IN YEAR 1975 : 115

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	FIRST VAR	ADD SEC VAR	FIRST 2 VARS	ADD THIRD VAR	ALL 3 VARS
11	211.53	0.91	104.85	0.04	58.75
12	165.50	11.51	212.74	0.80	137.33
13	35.91	6.16	34.28	0.21.	19.90
14	20.49	0.97	10.68	0.62	6.88
15	1.73	7.45	5.38	1.51	4.39
16	10.55	8.94	15.72	0.15	9.04
17	1.72	0.38	0.98	0.13	0.60
18	15.22	22.91	42.88	0.80	27.91
19	32.43	2.51	20.97	0.71	13.55
20	17.42	3.87	14.22	0.04	7.98

III.CORRESPONDING DEGREES OF FREEDOM:

1 7	1 6	2 6	1 5	3 5

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.59	3.78	3.46	4.06	3.62
0.95	5.59	5.99	5.14	6.61	5.41
0.99	12.25	13.75	10.90	16.30	12.10

RATING=1500 *PAY GRADE*=8

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	*FIRST VAR*	*SEC VAR*	*THIRD VAR*	*PERCENT VOL.ADV.IN* 1973
14	2	3	1	11.58
15	2	3	1	8.42
16	2	1	3	18.95
17	2	3	1	17.89
18	2	1	3	22.11
19	2	3	1	11.58
20	2	3	1	3.16

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 93.68

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 8 *IN YEAR* 1975 : 95

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	*FIRST VAR*	*ADD SEC VAR*	*FIRST* 2 *VARS*	*ADD THIRD VAR*	*ALL* 3 *VARS*
14	53.71	0.02	21.59	0.00	10.80
15	47.72	3.94	39.85	18.68	150.25
16	64.02	1.51	36.06	3.15	38.01
17	2.80	7.53	7.00	19.55	32.81
18	5.48	4.96	7.39	0.06	3.80
19	1.62	0.72	1.13	3.21	2.24
20	1.23	0.66	0.90	0.06	0.48

III.CORRESPONDING DEGREES OF FREEDOM:

	1 5	1 4	2 4	1 3	3 3

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	4.06	4.54	4.32	5.54	5.39
0.95	6.61	7.71	6.94	10.10	9.28
0.99	16.30	21.20	18.00	34.10	29.50

RATING=1500 PAY GRADE=9

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	FIRST VAR	SEC VAR	THIRD VAR	PERCENT VOL.ADV.IN 1973
14	3	1	2	3.33
15	2	3	1	3.33
16	2	3	1	3.33
17	3	2	1	16.67
18	2	3	1	20.00
19	2	3	1	13.33
20	2	3	1	13.33
21	3	1	2	3.33
23	2	1	3	3.33
24	3	1	2	3.33
25	2	3	1	10.00
26	3	2	1	3.33
29	1	2	3	3.33

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 100

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 9 IN YEAR 1975 : 30

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	FIRST VAR	ADD SEC VAR	FIRST 2 VARS	ADD THIRD VAR	ALL 3 VARS
14	4.36	1.04	2.72	1.28	2.36
15	12.14	6.19	15.46	0.00	7.73
16	1.31	2.89	2.34	5.24	4.97
17	2.82	3.84	4.14	1.98	4.09
18	6.77	5.68	9.40	0.28	5.22
19	22.18	15.52	51.04	0.44	29.39
20	22.97	10.66	39.00	0.00	19.51
21	2.15	1.62	2.02	0.94	1.64
23	32.80	4.27	29.24	0.46	17.00
24	23.96	3.10	18.57	0.17	9.86
25	3.01	1.40	2.32	0.12	1.25
26	1.57	0.31	0.83	0.11	0.47
29	1.00	1.00	1.00	1.00	1.00

III.CORRESPONDING DEGREES OF FREEDOM:

1 5	1 4	2 4	1 3	3 3

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	4.06	4.54	4.32	5.54	5.39
0.95	6.61	5.54	6.94	10.10	9.28

STEPWISE MULTIPLE REGRESSION OF NUMBER OF TOTAL ADVANCEMENTS IN AN LOS YEAR ON THREE PREDICTOR VARIABLES.

PREDICTOR VARIABLE 1: NUMBER OF TESTPASSERS IN SAME LOS YEAR
PREDICTOR VARIABLE 2: VOLUME OF TOTAL ADVANCEMENTS IN PAY GRADE
PREDICTOR VARIABLE 3: INVENTORY IN SAME LOS YEAR

RATING=1800 PAY GRADE=4

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	FIRST VAR	SEC VAR	THIRD VAR	PERCENT VOL.ADV.IN 1973
1	2	3	1	29.46
2	2	1	3	43.32
3	3	1	2	22.34
4	3	1	2	3.65

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 98.76
TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 4 IN YEAR 1975 : 1616

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	FIRST VAR	ADD SEC VAR	FIRST 2 VARS	ADD THIRD VAR	ALL 3 VARS
1	6.30	11.05	13.19	1.78	10.53
2	3.67	0.74	2.13	3.28	3.06
3	12.38	10.92	20.43	3.15	19.56
4	9.66	6.28	11.62	0.10	6.62

III.CORRESPONDING DEGREES OF FREEDOM:

	1 7	1 6	2 6	1 5	3 5

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.59	3.78	3.46	4.06	3.62
0.95	5.59	5.99	5.14	6.61	5.41
0.99	12.20	13.70	10.90	16.30	12.10

APPENDIX 8 (cont'd).

RATING=1800 *PAY GRADE*=5

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	*FIRST VAR*	*SEC VAR*	*THIRD VAR*	*PERCENT VOL.ADV.IN* 1973
2	2	3	1	20.76
3	1	2	3	50.89
4	2	3	1	17.44

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 89.09

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 5 *IN YEAR* 1975 : 843

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	*FIRST VAR*	*ADD SEC VAR*	*FIRST* 2 *VARS*	*ADD THIRD VAR*	*ALL* 3 *VARS*
2	23.82	26.44	68.40	0.54	42.28
3	13.74	9.62	20.14	0.38	12.17
4	8.88	1.97	6.05	0.00	3.36

III.CORRESPONDING DEGREES OF FREEDOM:

	1 7	1 6	2 6	1 5	3 5

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.59	3.78	3.46	4.06	3.62
0.95	5.59	5.99	5.14	6.61	5.41
0.99	12.20	13.70	10.90	16.30	12.10

RATING=1800 *PAY GRADE*=6

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	*FIRST VAR*	*SEC VAR*	*THIRD VAR*	*PERCENT VOL.ADV.IN* 1973
5	3	1	2	6.10
6	2	3	1	10.98
7	2	1	3	8.94
8	2	3	1	10.98
9	2	3	1	7.72
10	2	3	1	6.91
11	2	3	1	11.79
12	2	3	1	6.10
13	2	1	3	5.69
14	2	1	3	6.50
16	2	1	3	3.25
19	3	1	2	4.47

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 89.43

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 6 *IN YEAR* 1975 : 246

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	*FIRST VAR*	*ADD SEC VAR*	*FIRST* 2 *VARS*	*ADD THIRD VAR*	*ALL* 3 *VARS*
5	1.75	11.57	7.97	0.03	4.47
6	1.89	0.65	1.22	0.31	0.82
7	72.36	1.29	38.30	0.30	22.66
8	62.61	3.33	43.37	0.21	25.16
9	29.34	10.47	39.75	0.07	22.43
10	25.64	16.34	49.09	1.59	36.47
11	25.29	27.63	74.57	1.63	55.50
12	26.03	26.78	74.35	7.01	101.58
13	29.90	5.42	27.11	0.04	15.19
14	15.47	1.24	8.62	0.00	4.79
16	24.76	13.22	40.59	1.74	30.99
19	19.30	0.45	9.11	0.62	5.90

III.CORRESPONDING DEGREES OF FREEDOM:

1 7	1 6	2 6	1 5	3 5

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.59	3.78	3.46	4.06	3.62
0.95	5.59	5.99	5.14	6.61	5.41
0.99	12.20	13.70	10.90	16.30	12.10

RATING=1800 PAY GRADE=7

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	FIRST VAR	SEC VAR	THIRD VAR	PERCENT VOL.ADV.IN 1973
12	2	3	1	6.35
13	3	2	1	11.11
14	2	3	1	7.94
15	2	3	1	6.35
16	3	2	1	23.81
17	2	3	1	9.52
18	3	2	1	17.46
19	2	3	1	9.52

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 92.06

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 7 IN YEAR 1975 : 63

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	FIRST VAR	ADD SEC VAR	FIRST 2 VARS	ADD THIRD VAR	ALL 3 VARS
12	10.65	5.63	11.66	0.45	7.20
13	9.51	9.56	15.34	0.00	8.52
14	54.08	9.25	63.54	0.36	37.98
15	17.96	7.20	20.53	0.13	11.75
16	33.53	5.66	30.75	0.40	18.60
17	7.28	19.12	22.63	0.27	13.35
18	5.22	10.00	10.96	5.19	14.14
19	4.03	7.64	7.75	0.71	5.15

III.CORRESPONDING DEGREES OF FREEDOM:

1 7	1 6	2 6	1 5	3 5

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.59	3.78	3.46	4.06	3.62
0.95	5.59	5.99	5.14	6.61	5.41
0.99	12.20	13.70	10.90	16.30	12.10

RATING=1800 PAY GRADE=8

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	FIRST VAR	SEC VAR	THIRD VAR	PERCENT VOL.ADV.IN 1973
13	1	2	3	5.41
14	3	1	2	8.11
15	2	1	3	8.11
16	2	3	1	8.11
17	3	2	1	18.92
18	1	3	2	16.22
19	2	3	1	10.81
20	3	1	2	13.51

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 89.19

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 8 IN YEAR 1975 : 37

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	FIRST VAR	ADD SEC VAR	FIRST 2 VARS	ADD THIRD VAR	ALL 3 VARS
13	2.53	5.51	5.16	2.14	5.13
14	0.61	0.05	0.27	0.02	0.14
15	1.16	4.46	3.21	1.67	3.06
16	30.37	0.76	14.85	0.30	8.26
17	37.22	55.49	249.17	3.00	249.99
18	6.20	2.27	5.03	0.94	3.61
19	1.33	0.22	0.67	0.00	0.34
20	7.11	3.45	7.02	0.04	3.56

III.CORRESPONDING DEGREES OF FREEDOM:

1 5	1 4	2 4	1 3	3 3

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	4.06	4.54	4.32	5.54	5.39
0.95	6.61	7.71	6.94	10.10	9.28
0.99	16.30	21.20	18.00	34.10	29.50

RATING=1800 PAY GRADE=9

I.ORDER OF PREDICTOR VARIABLES IN STEPWISE REGRESSION:

LOS	FIRST VAR	SEC VAR	THIRD VAR	PERCENT VOL.ADV.IN 1973
14	1	2	3	5.00
16	2	1	3	10.00
17	3	1	2	20.00
18	2	3	1	15.00
19	3	2	1	30.00
22	2	1	3	5.00
23	3	1	2	5.00
26	3	2	1	5.00
31	1	2	3	5.00

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 100

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 9 IN YEAR 1975 : 20

II.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	FIRST VAR	ADD SEC VAR	FIRST 2 VARS	ADD THIRD VAR	ALL 3 VARS
14	1.00	1.00	1.00	1.00	1.00
16	6.71	0.15	2.86	1.67	2.79
17	4.67	2.51	4.30	0.00	2.15
18	2.59	5.38	5.12	28.28	36.14
19	5.26	13.39	15.84	0.38	9.05
22	1.56	0.22	0.77	0.00	0.39
23	2.01	3.94	3.57	0.35	2.11
26	0.97	0.12	0.46	0.19	0.31
31	1.00	1.00	1.00	1.00	1.00

III.CORRESPONDING DEGREES OF FREEDOM:

1 5	1 4	2 4	1 3	3 3

IV.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	4.06	4.54	4.32	5.54	5.39
0.95	6.61	7.71	6.94	10.10	9.28
0.99	16.30	21.20	18.00	34.10	29.50

COMPARISON OF TWO MULTIPLE REGRESSION MODELS THAT PREDICT
THE NUMBER OF ADVANCEMENTS IN AN LOS YEAR.

MODEL 1: REGRESSION ON TESTPASSERS IN SAME LOS YEAR (T.P.)
AND VOLUME OF ADVANCEMENTS IN PAY GRADE (VOL.)
MODEL 2: REGRESSION ON INVENTORY IN SAME LOS YEAR (INV.)
AND VOLUME OF ADVANCEMENTS IN PAY GRADE (VOL.)

RATING=0 *PAY GRADE=4*

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	*T.P. AND VOL.*	*INV. AND VOL.*	*PERCENT VOL.ADV.IN 1973*
1	31.96	13.89	20.00
2	33.44	55.97	35.89
3	2.95	13.26	31.23
4	0.43	3.80	9.20

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 96.32
TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 4 IN YEAR 1975: 56931

II.CORRESPONDING DEGREES OF FREEDOM:

	2 6	2 6

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.46	3.46
0.95	5.14	5.14
0.99	10.90	10.90

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	*T.P. AND VOL.*	*INV. AND VOL.*
0.90	55.89	96.32
0.95	55.89	87.12
0.99	55.89	87.12

APPENDIX 9 (cont'd)

RATING=0 *PAY GRADE*=5

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	*T.P. AND VOL.*	*INV. AND VOL.*	*PERCENT VOL.ADV.IN* 1973
2	31.62	31.67	12.81
3	31.45	21.33	42.91
4	2.99	2.51	25.43
5	4.92	9.34	5.98
6	4.92	29.45	2.78
7	4.94	34.03	2.76
8	2.48	30.01	2.42

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 95.1

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 5 *IN YEAR* 1975: 31657

II.CORRESPONDING DEGREES OF FREEDOM:

	2 6	2 6

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.46	3.46
0.95	5.14	5.14
0.99	10.90	10.90

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	*T.P. AND VOL.*	*INV. AND VOL.*
0.90	67.25	69.67
0.95	55.73	69.67
0.99	55.73	63.69

RATING=0 PAY GRADE=6

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	T.P. AND VOL.	INV. AND VOL.	PERCENT VOL.ADV.IN 1973
4	14.75	8.91	2.58
5	10.58	10.72	15.69
6	22.22	23.49	12.57
7	229.75	182.48	10.41
8	650.14	1226.54	8.82
9	258.63	343.19	7.51
10	16.24	114.93	6.25
11	20.96	178.92	6.83
12	77.57	74.49	6.27
13	95.87	63.77	4.81
14	30.83	128.94	3.35
15	46.65	44.37	2.53
16	20.88	25.84	2.72
17	3.19	13.91	3.32
18	0.11	42.05	3.02

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 96.68

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 6 IN YEAR 1975: 11714

II.CORRESPONDING DEGREES OF FREEDOM:

	2 6	2 6

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.46	3.46
0.95	5.14	5.14
0.99	10.90	10.90

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	T.P. AND VOL.	INV. AND VOL.
0.90	90.34	96.68
0.95	90.34	96.68
0.99	74.65	78.41

RATING=0 PAY GRADE=7

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	T.P. AND VOL.	INV. AND VOL.	PERCENT VOL.ADV.IN 1973
9	14.23	24.52	4.17
10	37.57	60.04	4.30
11	45.58	67.18	6.13
12	77.81	555.20	8.18
13	35.61	210.08	10.33
14	12.83	87.34	9.74
15	27.83	41.34	11.06
16	18.93	33.06	9.74
17	3.77	18.14	11.68
18	0.34	3.69	11.44
19	2.26	24.41	5.90
20	3.27	60.78	3.06

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 95.72
TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 7 IN YEAR 1975: 4745

II.CORRESPONDING DEGREES OF FREEDOM:

	2 6	2 6

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.46	3.46
0.95	5.14	5.14
0.99	10.90	10.90

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	T.P. AND VOL.	INV. AND VOL.
0.90	75.32	95.72
0.95	63.65	84.28
0.99	63.65	84.28

RATING=0 PAY GRADE=8

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	T.P. AND VOL.	INV. AND VOL.	PERCENT VOL.ADV.IN 1973
12	2.12	4.17	2.58
13	33.62	35.91	6.82
14	11.51	6.02	8.33
15	2.88	5.43	10.58
16	28.89	33.58	11.65
17	18.99	66.83	15.59
18	2.76	8.79	16.62
19	0.83	3.54	10.72
20	2.11	52.15	5.46
21	4.78	12.07	4.19

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 92.54

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 8 IN YEAR 1975: 2052

II.CORRESPONDING DEGREES OF FREEDOM:

	2 4	2 4

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	4.32	4.32
0.95	6.94	6.94
0.99	18.00	18.00

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	T.P. AND VOL.	INV. AND VOL.
0.90	46.59	79.24
0.95	42.40	60.33
0.99	34.06	39.52

APPENDIX 9 (cont'd).

RATING=0 *PAY GRADE*=9

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	*T.P. AND VOL.*	*INV. AND VOL.*	*PERCENT VOL.ADV.IN* 1973
14	15.77	6.91	2.68
15	5.43	6.55	4.34
16	35.04	55.68	8.05
17	28.89	201.79	11.88
18	14.86	27.13	14.43
19	3.39	29.50	12.13
20	6.35	28.93	7.66
21	8.50	167.28	10.98
22	10.30	30.85	4.47
23	1.77	37.09	2.17
24	5.33	27.03	3.58
25	1.43	6.95	3.45
26	66.10	34.19	3.07
27	2.16	3.18	2.43
28	19.50	11.52	2.81
29	29.55	5.85	2.81

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 96.93

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 9 *IN YEAR* 1975: 783

II.CORRESPONDING DEGREES OF FREEDOM:

	2 4	2 4

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	4.32	4.32
0.95	6.94	6.94
0.99	18.00	18.00

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	*T.P. AND VOL.*	*INV. AND VOL.*
0.90	76.76	94.51
0.95	61.17	84.67

COMPARISON OF TWO MULTIPLE REGRESSION MODELS THAT PREDICT
THE NUMBER OF ADVANCEMENTS IN AN LOS YEAR.

MODEL 1: REGRESSION ON TESTPASSERS IN SAME LOS YEAR (T.P.)
AND VOLUME OF ADVANCEMENTS IN PAY GRADE (VOL.)
MODEL 2: REGRESSION ON INVENTORY IN SAME LOS YEAR (INV.)
AND VOLUME OF ADVANCEMENTS IN PAY GRADE (VOL.)

RATING=300 PAY GRADE=4

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	T.P. AND VOL.	INV. AND VOL.	PERCENT VOL.ADV.IN 1973
1	39.68	19.19	10.76
2	41.02	12.35	37.61
3	1.64	100.94	43.41
4	1.09	16.24	6.87

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 98.65
TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 4 IN YEAR 1975: 1412

II.CORRESPONDING DEGREES OF FREEDOM:

	2 6	2 6

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.46	3.46
0.95	5.14	5.14
0.99	10.90	10.90

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	T.P. AND VOL.	INV. AND VOL.
0.90	48.37	98.65
0.95	48.37	98.65
0.99	48.37	98.65

APPENDIX 9 (cont'd).

RATING=300 *PAY GRADE*=5

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	*T.P. AND VOL.*	*INV. AND VOL.*	*PERCENT VOL.ADV.IN* 1973
2	19.79	7.34	9.21
3	97.00	15.41	54.32
4	0.19	5.92	28.38
5	14.14	4.92	2.44

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 94.36

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 5 *IN YEAR* 1975: 532

II.CORRESPONDING DEGREES OF FREEDOM:

	2 6	2 6

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.46	3.46
0.95	5.14	5.14
0.99	10.90	10.90

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	*T.P. AND VOL.*	*INV. AND VOL.*
0.90	65.98	94.36
0.95	65.98	91.92
0.99	65.98	54.32

RATING=300 PAY GRADE=6

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	T.P. AND VOL.	INV. AND VOL.	PERCENT VOL.ADV.IN 1973
4	29.10	12.98	3.39
5	7.99	7.25	13.56
6	110.58	92.66	13.56
7	27.89	53.31	8.47
8	19.59	12.12	15.82
9	42.51	34.59	7.34
10	35.36	13.29	5.08
11	14.55	7.83	8.47
12	62.14	11.97	5.08
14	49.40	6.46	3.39
15	17.10	9.60	4.52
16	18.39	0.96	2.82

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 91.53

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 6 IN YEAR 1975: 177

II.CORRESPONDING DEGREES OF FREEDOM:

	2 6	2 6

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.46	3.46
0.95	5.14	5.14
0.99	10.90	10.90

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	T.P. AND VOL.	INV. AND VOL.
0.90	91.53	88.70
0.95	91.53	88.70
0.99	77.97	58.76

RATING=300 PAY GRADE=7

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	T.P. AND VOL.	INV. AND VOL.	PERCENT VOL.ADV.IN 1973
9	6.02	7.71	2.38
10	8.65	3.30	3.57
11	7.16	23.21	5.95
12	22.25	21.31	11.90
13	37.65	234.17	7.14
14	11.37	8.41	16.67
15	2.16	1.89	17.86
16	21.30	26.93	10.71
17	5.95	11.80	3.57
18	1.47	2.21	9.52
19	10.94	24.00	3.57
20	1.50	2.64	3.57
21	1.15	1.93	2.38

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 98.81

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 7 IN YEAR 1975: 84

II.CORRESPONDING DEGREES OF FREEDOM:

	2 6	2 6

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.46	3.46
0.95	5.14	5.14
0.99	10.90	10.90

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	T.P. AND VOL.	INV. AND VOL.
0.90	65.48	61.90
0.95	65.48	61.90
0.99	50.00	42.86

APPENDIX 9 (cont'd).

RATING=300 PAY GRADE=8

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	T.P. AND VOL.	INV. AND VOL.	PERCENT VOL.ADV.IN 1973
13	1.49	10.12	16.67
14	2.73	2.73	16.67
15	2.39	7.48	16.67
16	23.23	25.01	11.11
17	32.81	42.66	5.56
18	1.70	1.85	5.56
19	2.56	3.27	5.56
20	1.09	0.98	5.56
21	0.36	2.44	5.56
22	2.80	0.00	5.56
25	1.00	1.00	5.56

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 100

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 8 IN YEAR 1975: 18

II.CORRESPONDING DEGREES OF FREEDOM:

	2 4	2 4

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	4.32	4.32
0.95	6.94	6.94
0.99	18.00	18.00

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	T.P. AND VOL.	INV. AND VOL.
0.90	16.67	50.00
0.95	16.67	50.00
0.99	16.67	16.67

RATING=300 PAY GRADE=9

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	T.P. AND VOL.	INV. AND VOL.	PERCENT VOL.ADV.IN 1973
17	4.75	3.60	50.00
19	3.10	2.32	50.00

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 100

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 9 IN YEAR 1975: 2

II.CORRESPONDING DEGREES OF FREEDOM:

	2 4	2 4

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	4.32	4.32
0.95	6.94	6.94
0.99	18.00	18.00

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	T.P. AND VOL.	INV. AND VOL.
0.90	50.00	0.00
0.95	0.00	0.00
0.99	0.00	0.00

COMPARISON OF TWO MULTIPLE REGRESSION MODELS THAT PREDICT THE NUMBER OF ADVANCEMENTS IN AN LOS YEAR.

MODEL 1: REGRESSION ON TESTPASSERS IN SAME LOS YEAR (T.P.) AND VOLUME OF ADVANCEMENTS IN PAY GRADE (VOL.)
MODEL 2: REGRESSION ON INVENTORY IN SAME LOS YEAR (INV.) AND VOLUME OF ADVANCEMENTS IN PAY GRADE (VOL.)

RATING=1500 PAY GRADE=4

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	T.P. AND VOL.	INV. AND VOL.	PERCENT VOL.ADV.IN 1973
1	22.28	1.62	18.41
2	13.48	3.73	33.30
3	2.09	64.76	37.66
4	0.67	14.66	9.01

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 98.38
TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 4 IN YEAR 1975: 2775

II.CORRESPONDING DEGREES OF FREEDOM:

	2 6	2 6

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.46	3.46
0.95	5.14	5.14
0.99	10.90	10.90

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	T.P. AND VOL.	INV. AND VOL.
0.90	51.71	79.96
0.95	51.71	46.67
0.99	51.71	46.67

APPENDIX 9 (cont'd).

RATING=1500 *PAY GRADE*=5

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	*T.P. AND VOL.*	*INV. AND VOL.*	*PERCENT VOL.ADV.IN* 1973
2	10.22	8.06	8.71
3	30.52	5.37	54.44
4	2.45	2.05	28.88
5	5.97	8.06	2.82

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 94.85

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 5 *IN YEAR* 1975: 1205

II.CORRESPONDING DEGREES OF FREEDOM:

	2 6	2 6

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.46	3.46
0.95	5.14	5.14
0.99	10.90	10.90

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	*T.P. AND VOL.*	*INV. AND VOL.*
0.90	65.98	65.98
0.95	65.98	65.98
0.99	54.44	0.00

RATING=1500 PAY GRADE=6

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	T.P. AND VOL.	INV. AND VOL.	PERCENT VOL.ADV.IN 1973
4	4.19	3.47	6.54
6	229.39	193.30	5.14
7	69.15	94.84	12.15
8	34.31	82.59	13.55
9	87.39	91.75	11.21
10	34.26	52.59	10.75
11	70.09	76.05	9.35
12	37.60	41.62	7.01
13	18.37	20.81	6.07
14	13.75	14.37	4.21
15	9.45	13.43	3.27
16	3.47	2.76	3.74

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 92.99

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 6 IN YEAR 1975: 214

II.CORRESPONDING DEGREES OF FREEDOM:

	2 6	2 6

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.46	3.46
0.95	5.14	5.14
0.99	10.90	10.90

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	T.P. AND VOL.	INV. AND VOL.
0.90	92.99	89.25
0.95	82.71	82.71
0.99	79.44	82.71

RATING=1500 PAY GRADE=7

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	T.P. AND VOL.	INV. AND VOL.	PERCENT VOL.ADV.IN 1973
11	92.45	104.85	6.09
12	212.74	162.04	9.57
13	23.61	34.28	9.57
14	8.98	10.68	9.57
15	0.89	4.55	13.91
16	6.57	15.72	14.78
17	0.81	0.98	14.78
18	2.20	11.31	6.96
19	3.26	13.91	6.09
20	3.31	14.22	3.48
21	0.45	8.76	2.61

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 97.39

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 7 IN YEAR 1975: 115

II.CORRESPONDING DEGREES OF FREEDOM:

	2 6	2 6

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.46	3.46
0.95	5.14	5.14
0.99	10.90	10.90

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	T.P. AND VOL.	INV. AND VOL.
0.90	49.57	82.61
0.95	49.57	68.70
0.99	25.22	56.52

RATING=1500 PAY GRADE=8

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	T.P. AND VOL.	INV. AND VOL.	PERCENT VOL.ADV.IN 1973
14	21.56	21.59	11.58
15	23.15	39.85	8.42
16	36.06	26.86	18.95
17	2.83	7.00	17.89
18	7.39	5.99	22.11
19	0.70	1.13	11.58
20	0.58	0.90	3.16
28	0.14	0.23	2.11

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 95.79

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 8 IN YEAR 1975: 95

II.CORRESPONDING DEGREES OF FREEDOM:

	2 4	2 4

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	4.32	4.32
0.95	6.94	6.94
0.99	18.00	18.00

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	T.P. AND VOL.	INV. AND VOL.
0.90	61.05	78.95
0.95	61.05	56.84
0.99	38.95	38.95

RATING=1500 PAY GRADE=9

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	T.P. AND VOL.	INV. AND VOL.	PERCENT VOL.ADV.IN 1973
14	0.51	2.30	3.33
15	13.03	15.46	3.33
16	0.92	2.34	3.33
17	2.09	4.14	16.67
18	5.83	9.40	20.00
19	18.67	51.04	13.33
20	16.30	39.00	13.33
21	0.99	1.87	3.33
23	29.24	20.07	3.33
24	3.28	10.85	3.33
25	1.82	2.32	10.00
26	0.53	0.83	3.33
29	1.00	1.00	3.33

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 100

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 9 IN YEAR 1975: 30

II.CORRESPONDING DEGREES OF FREEDOM:

	2 4	2 4

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	4.32	4.32
0.95	6.94	6.94
0.99	18.00	18.00

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	T.P. AND VOL.	INV. AND VOL.
0.90	53.33	56.67
0.95	33.33	56.67
0.99	16.67	30.00

COMPARISON OF TWO MULTIPLE REGRESSION MODELS THAT PREDICT
THE NUMBER OF ADVANCEMENTS IN AN LOS YEAR.

MODEL 1: REGRESSION ON TESTPASSERS IN SAME LOS YEAR (T.P.)
AND VOLUME OF ADVANCEMENTS IN PAY GRADE (VOL.)
MODEL 2: REGRESSION ON INVENTORY IN SAME LOS YEAR (INV.)
AND VOLUME OF ADVANCEMENTS IN PAY GRADE (VOL.)

RATING=1800 PAY GRADE=4

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	T.P. AND VOL.	INV. AND VOL.	PERCENT VOL.ADV.IN 1973
1	2.70	13.19	29.46
2	2.13	1.78	43.32
3	7.50	8.96	22.34
4	3.35	4.18	3.65

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 98.76
TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 4 IN YEAR 1975: 1616

II.CORRESPONDING DEGREES OF FREEDOM:

	2 6	2 6

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.46	3.46
0.95	5.14	5.14
0.99	10.90	10.90

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	T.P. AND VOL.	INV. AND VOL.
0.90	22.34	55.45
0.95	22.34	51.79
0.99	0.00	29.46

APPENDIX 9 (cont'd).

RATING=1800 *PAY GRADE*=5

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	*T.P. AND VOL.*	*INV. AND VOL.*	*PERCENT VOL.ADV.IN* 1973
2	14.52	68.40	20.76
3	20.14	7.02	50.89
4	3.99	6.05	17.44
5	7.19	17.85	2.85
8	6.39	19.45	2.61

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 94.54

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 5 *IN YEAR* 1975: 843

II.CORRESPONDING DEGREES OF FREEDOM:

	2 6	2 6

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.46	3.46
0.95	5.14	5.14
0.99	10.90	10.90

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	*T.P. AND VOL.*	*INV. AND VOL.*
0.90	94.54	94.54
0.95	77.11	94.54
0.99	71.65	26.22

RATING=1800 PAY GRADE=6

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	T.P. AND VOL.	INV. AND VOL.	PERCENT VOL.ADV.IN 1973
5	0.01	1.27	6.10
6	1.04	1.22	10.98
7	38.30	33.50	8.94
8	38.69	43.37	10.98
9	18.30	39.75	7.72
10	44.25	49.09	6.91
11	31.98	74.57	11.79
12	45.74	74.35	6.10
13	27.11	15.36	5.69
14	8.62	6.81	6.50
15	36.86	14.49	2.85
16	40.59	15.04	3.25
17	1.60	11.41	2.85
18	4.36	26.09	2.44
19	0.86	8.46	4.47

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 97.56

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 6 IN YEAR 1975: 246

II.CORRESPONDING DEGREES OF FREEDOM:

	2 6	2 6

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.46	3.46
0.95	5.14	5.14
0.99	10.90	10.90

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	T.P. AND VOL.	INV. AND VOL.
0.90	73.17	80.49
0.95	70.73	80.49
0.99	64.23	69.51

APPENDIX 9 (cont'd).

RATING=1800 *PAY GRADE*=7

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	*T.P. AND VOL.*	*INV. AND VOL.*	*PERCENT VOL.ADV.IN* 1973
12	7.44	11.66	6.35
13	8.24	15.34	11.11
14	39.57	63.54	7.94
15	13.10	20.53	6.35
16	30.95	30.75	23.81
17	13.87	22.63	9.52
18	2.14	10.96	17.46
19	2.27	7.75	9.52

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 92.06

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 7 IN YEAR 1975: 63

II.CORRESPONDING DEGREES OF FREEDOM:

	2 6	2 6

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	3.46	3.46
0.95	5.14	5.14
0.99	10.90	10.90

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	*T.P. AND VOL.*	*INV. AND VOL.*
0.90	65.08	92.06
0.95	65.08	92.06
0.99	47.62	82.54

RATING=1800 PAY GRADE=8

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	T.P. AND VOL.	INV. AND VOL.	PERCENT VOL.ADV.IN 1973
12	1.41	1.37	2.70
13	5.16	1.27	5.41
14	0.23	0.27	8.11
15	3.21	0.97	8.11
16	12.93	14.85	8.11
17	106.34	249.17	18.92
18	3.97	2.51	16.22
19	0.60	0.67	10.81
20	0.96	2.87	13.51
21	0.88	1.91	2.70
22	2.50	0.14	2.70
23	0.14	0.11	2.70

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 100

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 8 IN YEAR 1975: 37

II.CORRESPONDING DEGREES OF FREEDOM:

	2 4	2 4

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	4.32	4.32
0.95	6.94	6.94
0.99	18.00	18.00

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	T.P. AND VOL.	INV. AND VOL.
0.90	32.43	27.03
0.95	27.03	27.03
0.99	18.92	18.92

APPENDIX 9 (cont'd).

RATING=1800 *PAY GRADE*=9

I.F-VALUES TESTING 'SIGNIFICANCE' OF PREDICTOR VARIABLES:

LOS	*T.P. AND VOL.*	*INV. AND VOL.*	*PERCENT VOL.ADV.IN* 1973
14	1.00	1.00	5.00
16	2.86	2.70	10.00
17	1.52	2.19	20.00
18	1.93	5.12	15.00
19	5.92	15.84	30.00
22	0.77	0.76	5.00
23	0.11	1.09	5.00
26	0.52	0.46	5.00
31	1.00	1.00	5.00

TOTAL PERC. OF VOLUME OF ADV. ACCOUNTED FOR IN ABOVE LOS YEARS: 100

TOTAL VOLUME OF ADVANCEMENTS IN PAY GRADE 9 IN YEAR 1975: 20

II.CORRESPONDING DEGREES OF FREEDOM:

	2 4	2 4

III.SOME PERCENTAGE POINTS OF THE F-DISTRIBUTION WITH ABOVE DEGREES OF FREEDOM:

0.90	4.32	4.32
0.95	6.94	6.94
0.99	18.00	18.00

IV.PERCENTAGE OF VOLUME OF ADV. FOR WHICH THE REGRESSION MODELS ARE SIGNIFICANT:

SIG.LEVEL	*T.P. AND VOL.*	*INV. AND VOL.*
0.90	30.00	45.00
0.95	0.00	30.00
0.99	0.00	0.00

APPENDIX 10

COMPARATIVE STATISTICS ON MODEL 1(T.P. AND VOL.) AND MODEL 2 (INV. AND VOL.)

RATING=0 *YEAR*=1972

I.WEIGHTED AVERAGE OF SQUARES OF MULTIPLE CORRELATION COEFFICIENTS:

PAY GRADE	*T.P. AND VOL.*	*INV. AND VOL.*
4	0.7331	0.8483
5	0.7979	0.8141
6	0.8790	0.9263
7	0.7424	0.8974
8	0.7316	0.8352
9	0.7822	0.8802

II.PERCENT ERRORS IN ESTIMATION:

PAY GRADE	*T.P. AND VOL.*	*INV. AND VOL.*
4	15.90	9.16
5	11.65	11.46
6	17.05	13.11
7	11.71	9.69
8	22.46	8.00
9	23.17	16.75

III.ACTUAL MEAN LOS VALUE AND ERRORS OF ITS ESTIMATES:

PAY GRADE	*ACTUAL MEAN LOS*	*ACT-EST(T.P. AND VOL.)*	*ACT-EST(INV. AND VOL.)*
4	2.42	0.07	-0.02
5	3.66	-0.06	0.09
6	8.80	-0.32	-0.38
7	14.82	0.26	0.28
8	17.24	-0.59	-0.22
9	19.99	-0.08	0.20

IV.ACTUAL STANDARD DEVIATION OF LOS DISTR. AND ERRORS OF ITS ESTIMATES:

PAY GRADE	*ACTUAL STD.DEV.*	*ACT-EST(T.P. AND VOL.)*	*ACT-EST(INV. AND VOL.)*
4	1.18	0.03	0.05
5	2.03	-0.05	-0.03
6	3.99	-0.14	-0.16
7	3.36	-0.06	-0.08
8	3.42	-0.31	-0.03
9	3.85	-0.02	0.02

APPENDIX 10 (cont'd).

COMPARATIVE STATISTICS ON MODEL 1(T.P. AND VOL.) AND MODEL 2(INV. AND VOL.).

RATING=0 *YEAR*=1973

I.WEIGHTED AVERAGE OF SQUARES OF MULTIPLE CORRELATION COEFFICIENTS:

PAY GRADE	*T.P. AND VOL.*	*INV. AND VOL.*
4	0.7979	0.9056
5	0.6901	0.8026
6	0.8354	0.9140
7	0.7303	0.9091
8	0.6928	0.8430
9	0.7935	0.8947

II.PERCENT ERRORS IN ESTIMATION:

PAY GRADE	*T.P. AND VOL.*	*INV. AND VOL.*
4	13.24	9.50
5	14.35	23.56
6	28.64	29.49
7	19.63	21.57
8	19.22	15.59
9	14.12	16.95

III.ACTUAL MEAN LOS VALUE AND ERRORS OF ITS ESTIMATES:

PAY GRADE	*ACTUAL MEAN LOS*	*ACT-EST(T.P. AND VOL.)*	*ACT-EST(INV. AND VOL.)*
4	2.47	0.07	0.11
5	3.91	0.02	0.19
6	9.51	1.07	0.80
7	15.00	-0.22	-0.41
8	17.21	-0.49	-0.19
9	20.04	0.31	0.64

IV.ACTUAL STANDARD DEVIATION OF LOS DISTR. AND ERRORS OF ITS ESTIMATES:

PAY GRADE	*ACTUAL STD.DEV.*	*ACT-EST(T.P. AND VOL.)*	*ACT-EST(INV. AND VOL.)*
4	1.30	-0.02	-0.05
5	2.12	-0.17	-0.09
6	4.21	0.17	-0.16
7	3.33	-0.17	-0.01
8	3.15	-0.08	0.18

COMPARATIVE STATISTICS ON MODEL 1(T.P. AND VOL.) AND MODEL 2(INV. AND VOL.).

RATING=0 YEAR=1974

I.WEIGHTED AVERAGE OF SQUARES OF MULTIPLE CORRELATION COEFFICIENTS:

PAY GRADE	T.P. AND VOL.	INV. AND VOL.
4	0.7232	0.8314
5	0.7579	0.7798
6	0.8688	0.9195
7	0.7266	0.9017
8	0.6636	0.8241
9	0.7778	0.8956

II.PERCENT ERRORS IN ESTIMATION:

PAY GRADE	T.P. AND VOL.	INV. AND VOL.
4	28.28	22.43
5	37.18	38.06
6	33.61	26.49
7	19.64	17.95
8	16.46	10.01
9	16.73	10.34

III.ACTUAL MEAN LOS VALUE AND ERRORS OF ITS ESTIMATES:

PAY GRADE	ACTUAL MEAN LOS	ACT-EST(T.P. AND VOL.)	ACT-EST(INV. AND VOL.)
4	2.33	-0.25	-0.08
5	3.96	-0.59	-0.17
6	8.93	-1.22	0.34
7	15.13	0.46	0.04
8	17.64	-0.32	-0.06
9	19.62	-0.36	-0.02

IV.ACTUAL STANDARD DEVIATION OF LOS DISTR. AND ERRORS OF ITS ESTIMATES:

PAY GRADE	ACTUAL STD.DEV.	ACT-EST(T.P. AND VOL.)	ACT-EST(INV. AND VOL.)
4	1.36	-0.14	-0.10
5	2.14	-0.52	0.18
6	4.17	-0.79	0.20
7	3.33	-0.40	-0.27
8	3.05	-0.18	-0.04
9	3.56	0.01	0.05

APPENDIX 10 (cont'd).

COMPARATIVE STATISTICS ON MODEL 1(T.P. AND VOL.) AND MODEL 2(INV. AND VOL.).

RATING=300 *YEAR*=1972

I.WEIGHTED AVERAGE OF SQUARES OF MULTIPLE CORRELATION COEFFICIENTS:

PAY GRADE	*T.P. AND VOL.*	*INV. AND VOL.*
4	0.6189	0.8828
5	0.8563	0.8172
6	0.8882	0.8179
7	0.6669	0.7262
8	0.6514	0.6116
9	0.5563	0.4337

II.PERCENT ERRORS IN ESTIMATION:

PAY GRADE	*T.P. AND VOL.*	*INV. AND VOL.*
4	24.43	15.62
5	14.88	25.16
6	37.67	40.41
7	27.14	30.65
8	45.61	38.60
9	82.61	60.87

III.ACTUAL MEAN LOS VALUE AND ERRORS OF ITS ESTIMATES:

PAY GRADE	*ACTUAL MEAN LOS*	*ACT-EST(T.P. AND VOL.)*	*ACT-EST(INV. AND VOL.)*
4	2.50	0.12	0.01
5	3.28	-0.02	-0.02
6	8.71	-0.32	-0.17
7	14.31	0.81	0.87
8	16.19	-0.07	-0.54
9	17.83	-0.97	-0.36

IV.ACTUAL STANDARD DEVIATION OF LOS DISTR. AND ERRORS OF ITS ESTIMATES:

PAY GRADE	*ACTUAL STD.DEV.*	*ACT-EST(T.P. AND VOL.)*	*ACT-EST(INV. AND VOL.)*
4	0.71	-0.11	0.00
5	1.53	-0.09	-0.05
6	3.21	-0.43	-0.53
7	2.77	-0.07	-0.17
[illegible]	[illegible]	[illegible]	[illegible]

APPENDIX 10 (cont'd).

COMPARATIVE STATISTICS ON MODEL 1(T.P. AND VOL.) AND MODEL 2(INV. AND VOL.).

RATING=300 *YEAR*=1973

I.WEIGHTED AVERAGE OF SQUARES OF MULTIPLE CORRELATION COEFFICIENTS:

PAY GRADE	*T.P. AND VOL.*	*INV. AND VOL.*
4	0.6238	0.8723
5	0.7328	0.7342
6	0.8771	0.7703
7	0.6802	0.7130
8	0.5704	0.6549
9	0.6298	0.5827

II.PERCENT ERRORS IN ESTIMATION:

PAY GRADE	*T.P. AND VOL.*	*INV. AND VOL.*
4	27.52	14.87
5	21.95	24.42
6	39.13	27.54
7	40.82	33.67
8	74.07	70.37
9	128.57	71.43

III.ACTUAL MEAN LOS VALUE AND ERRORS OF ITS ESTIMATES:

PAY GRADE	*ACTUAL MEAN LOS*	*ACT-EST(T.P. AND VOL.)*	*ACT-EST(INV. AND VOL.)*
4	2.53	-0.08	0.13
5	3.53	-0.02	0.01
6	9.15	0.74	-0.30
7	14.79	0.17	-0.45
8	16.85	-0.04	-0.65
9	17.14	-1.19	-0.69

IV.ACTUAL STANDARD DEVIATION OF LOS DISTR. AND ERRORS OF ITS ESTIMATES:

PAY GRADE	*ACTUAL STD.DEV.*	*ACT-EST(T.P. AND VOL.)*	*ACT-EST(INV. AND VOL.)*
4	0.97	-0.02	-0.09
5	1.41	-0.31	-0.27
6	3.89	0.61	-0.30
7	2.78	0.13	-0.03
8	3.57	-0.56	-1.29
9	1.64	-1.17	-0.22

APPENDIX 10 (cont'd).

COMPARATIVE STATISTICS ON MODEL 1(T.P. AND VOL.) AND MODEL 2(INV. AND VOL.).

RATING=300 YEAR=1974

I.WEIGHTED AVERAGE OF SQUARES OF MULTIPLE CORRELATION COEFFICIENTS:

PAY GRADE	T.P. AND VOL.	INV. AND VOL.
4	0.7504	0.8221
5	0.7611	0.7308
6	0.8921	0.8375
7	0.7945	0.7559
8	0.5987	0.5980
9	0.5556	0.5427

II.PERCENT ERRORS IN ESTIMATION:

PAY GRADE	T.P. AND VOL.	INV. AND VOL.
4	52.07	24.75
5	42.42	41.00
6	22.05	29.23
7	46.04	25.90
8	45.45	42.42
9	81.82	81.82

III.ACTUAL MEAN LOS VALUE AND ERRORS OF ITS ESTIMATES:

PAY GRADE	ACTUAL MEAN LOS	ACT-EST(T.P. AND VOL.)	ACT-EST(INV. AND VOL.)
4	2.22	-0.48	0.09
5	3.64	0.01	-0.53
6	8.76	0.12	0.24
7	15.02	0.75	0.22
8	17.36	0.30	0.27
9	18.45	1.55	-0.30

IV.ACTUAL STANDARD DEVIATION OF LOS DISTR. AND ERRORS OF ITS ESTIMATES:

PAY GRADE	ACTUAL STD.DEV.	ACT-EST(T.P. AND VOL.)	ACT-EST(INV. AND VOL.)
4	0.95	0.15	-0.13
5	1.75	-0.15	-0.22
6	3.56	0.06	0.50
7	2.53	-0.29	-0.36
8	2.21	-0.55	-0.02
9	1.37	0.03	0.33

COMPARATIVE STATISTICS ON MODEL 1(T.P. AND VOL.) AND MODEL 2(INV. AND VOL.).

RATING=1500 YEAR=1972

I.WEIGHTED AVERAGE OF SQUARES OF MULTIPLE CORRELATION COEFFICIENTS:

PAY GRADE	T.P. AND VOL.	INV. AND VOL.
4	0.6831	0.6728
5	0.8271	0.6657
6	0.8942	0.9022
7	0.6922	0.7919
8	0.7094	0.7303
9	0.6623	0.7021

II.PERCENT ERRORS IN ESTIMATION:

PAY GRADE	T.P. AND VOL.	INV. AND VOL.
4	14.94	9.64
5	22.06	7.49
6	33.63	43.81
7	28.65	27.57
8	40.00	32.31
9	45.45	27.27

III.ACTUAL MEAN LOS VALUE AND ERRORS OF ITS ESTIMATES:

PAY GRADE	ACTUAL MEAN LOS	ACT-EST(T.P. AND VOL.)	ACT-EST(INV. AND VOL.)
4	2.24	0.01	0.09
5	3.19	-0.02	-0.07
6	10.10	0.59	0.60
7	14.79	-0.37	0.12
8	16.60	-0.17	0.02
9	18.30	-0.35	-0.51

IV.ACTUAL STANDARD DEVIATION OF LOS DISTR. AND ERRORS OF ITS ESTIMATES:

PAY GRADE	ACTUAL STD.DEV.	ACT-EST(T.P. AND VOL.)	ACT-EST(INV. AND VOL.)
4	0.79	-0.07	-0.02
5	1.43	-0.01	-0.05
6	3.60	0.32	-0.04
7	3.29	0.52	0.23
8	2.93	0.28	1.06
9	2.14	-0.03	-0.23

COMPARATIVE STATISTICS ON MODEL 1(T.P. AND VOL.) AND MODEL 2(INV. AND VOL.).

RATING=1500 YEAR=1973

I.WEIGHTED AVERAGE OF SQUARES OF MULTIPLE CORRELATION COEFFICIENTS:

PAY GRADE	T.P. AND VOL.	INV. AND VOL.
4	0.6883	0.7882
5	0.6523	0.7092
6	0.8631	0.8703
7	0.6028	0.7496
8	0.7073	0.7605
9	0.6726	0.7517

II.PERCENT ERRORS IN ESTIMATION:

PAY GRADE	T.P. AND VOL.	INV. AND VOL.
4	41.45	31.66
5	35.03	44.19
6	28.72	36.17
7	29.19	31.68
8	55.43	42.39
9	41.94	58.06

III.ACTUAL MEAN LOS VALUE AND ERRORS OF ITS ESTIMATES:

PAY GRADE	ACTUAL MEAN LOS	ACT-EST(T.P. AND VOL.)	ACT-EST(INV. AND VOL.)
4	2.45	0.17	0.30
5	3.50	0.10	0.26
6	9.96	-0.30	0.07
7	15.53	-0.05	-0.34
8	17.09	0.33	0.30
9	19.68	0.64	0.29

IV.ACTUAL STANDARD DEVIATION OF LOS DISTR. AND ERRORS OF ITS ESTIMATES:

PAY GRADE	ACTUAL STD.DEV.	ACT-EST(T.P. AND VOL.)	ACT-EST(INV. AND VOL.)
4	1.04	-0.07	-0.11
5	1.33	-0.32	-0.26
6	3.80	0.27	0.20

COMPARATIVE STATISTICS ON MODEL 1(T.P. AND VOL.) AND MODEL 2(INV. AND VOL.).

RATING=1500 YEAR=1974

I.WEIGHTED AVERAGE OF SQUARES OF MULTIPLE CORRELATION COEFFICIENTS:

PAY GRADE	T.P. AND VOL.	INV. AND VOL.
4	0.6221	0.5203
5	0.7019	0.6270
6	0.8882	0.8491
7	0.5372	0.7145
8	0.6988	0.7262
9	0.7331	0.7901

II.PERCENT ERRORS IN ESTIMATION:

PAY GRADE	T.P. AND VOL.	INV. AND VOL.
4	42.46	33.49
5	31.64	34.14
6	83.33	50.88
7	39.90	25.91
8	50.48	42.86
9	64.29	78.57

III.ACTUAL MEAN LOS VALUE AND ERRORS OF ITS ESTIMATES:

PAY GRADE	ACTUAL MEAN LOS	ACT-EST(T.P. AND VOL.)	ACT-EST(INV. AND VOL.)
4	2.46	-0.28	-0.17
5	3.78	-0.34	-0.13
6	10.91	0.19	-0.06
7	15.63	0.86	0.33
8	17.44	0.80	-0.77
9	19.29	0.29	-1.58

IV.ACTUAL STANDARD DEVIATION OF LOS DISTR. AND ERRORS OF ITS ESTIMATES:

PAY GRADE	ACTUAL STD.DEV.	ACT-EST(T.P. AND VOL.)	ACT-EST(INV. AND VOL.)
4	1.04	0.05	0.01
5	1.61	0.05	0.25
6	3.74	-0.69	-0.05
7	2.47	-0.88	-0.43
8	2.46	-0.29	-0.11
9	2.12	0.65	-1.10

COMPARATIVE STATISTICS ON MODEL 1(T.P. AND VOL.) AND MODEL 2(INV. AND VOL.).

RATING=1800 YEAR=1972

I.WEIGHTED AVERAGE OF SQUARES OF MULTIPLE CORRELATION COEFFICIENTS:

PAY GRADE	T.P. AND VOL.	INV. AND VOL.
4	0.5021	0.5583
5	0.7886	0.7786
6	0.7828	0.8298
7	0.7537	0.8051
8	0.6480	0.5407
9	0.4499	0.4767

II.PERCENT ERRORS IN ESTIMATION:

PAY GRADE	T.P. AND VOL.	INV. AND VOL.
4	4.82	17.77
5	8.43	14.42
6	29.29	31.66
7	37.50	34.00
8	48.15	42.59
9	39.39	51.52

III.ACTUAL MEAN LOS VALUE AND ERRORS OF ITS ESTIMATES:

PAY GRADE	ACTUAL MEAN LOS	ACT-EST(T.P. AND VOL.)	ACT-EST(INV. AND VOL.)
4	2.11	0.01	-0.20
5	3.53	-0.09	0.34
6	10.30	-0.29	-0.48
7	15.60	-0.70	0.55
8	17.60	-0.36	-0.33
9	19.58	0.29	0.23

IV.ACTUAL STANDARD DEVIATION OF LOS DISTR. AND ERRORS OF ITS ESTIMATES:

PAY GRADE	ACTUAL STD.DEV.	ACT-EST(T.P. AND VOL.)	ACT-EST(INV. AND VOL.)
4	1.04	-0.05	-0.12
5	2.01	0.22	0.40
6	3.82	-0.43	0.15

COMPARATIVE STATISTICS ON MODEL 1(T.P. AND VOL.) AND MODEL 2(INV. AND VOL.).

RATING=1800 YEAR=1973

I.WEIGHTED AVERAGE OF SQUARES OF MULTIPLE CORRELATION COEFFICIENTS:

PAY GRADE	T.P. AND VOL.	INV. AND VOL.
4	0.5233	0.5973
5	0.7953	0.8324
6	0.7298	0.7623
7	0.7079	0.8043
8	0.5761	0.5363
9	0.5750	0.5100

II.PERCENT ERRORS IN ESTIMATION:

PAY GRADE	T.P. AND VOL.	INV. AND VOL.
4	12.69	2.44
5	41.44	37.56
6	34.26	21.76
7	54.26	36.17
8	37.88	31.82
9	80.00	76.67

III.ACTUAL MEAN LOS VALUE AND ERRORS OF ITS ESTIMATES:

PAY GRADE	ACTUAL MEAN LOS	ACT-EST(T.P. AND VOL.)	ACT-EST(INV. AND VOL.)
4	2.06	-0.07	-0.02
5	3.42	-0.24	-0.21
6	10.54	0.31	0.09
7	15.70	0.91	0.51
8	17.30	-0.13	-0.37
9	18.77	-0.30	-0.20

IV.ACTUAL STANDARD DEVIATION OF LOS DISTR. AND ERRORS OF ITS ESTIMATES:

PAY GRADE	ACTUAL STD.DEV.	ACT-EST(T.P. AND VOL.)	ACT-EST(INV. AND VOL.)
4	0.96	-0.09	-0.01
5	1.70	-0.46	-0.44
6	4.08	0.27	0.02
7	2.56	-0.37	-0.34
8	2.50	0.21	-0.04
9	3.17	0.72	0.66

APPENDIX 10 (cont'd).

COMPARATIVE STATISTICS ON MODEL 1(T.P. AND VOL.) AND MODEL 2(INV. AND VOL.).

RATING=1800 *YEAR*=1974

I.WEIGHTED AVERAGE OF SQUARES OF MULTIPLE CORRELATION COEFFICIENTS:

PAY GRADE	*T.P. AND VOL.*	*INV. AND VOL.*
4	0.5249	0.5664
5	0.7963	0.8038
6	0.7718	0.7959
7	0.6439	0.7098
8	0.6375	0.6087
9	0.4256	0.4819

II.PERCENT ERRORS IN ESTIMATION:

PAY GRADE	*T.P. AND VOL.*	*INV. AND VOL.*
4	28.98	14.83
5	9.20	29.16
6	91.18	100.00
7	71.43	65.31
8	118.52	96.30
9	87.50	87.50

III.ACTUAL MEAN LOS VALUE AND ERRORS OF ITS ESTIMATES:

PAY GRADE	*ACTUAL MEAN LOS*	*ACT-EST(T.P. AND VOL.)*	*ACT-EST(INV. AND VOL.)*
4	1.94	-0.36	-0.16
5	3.29	-0.15	0.44
6	10.60	-1.56	-1.85
7	15.51	-0.11	-0.92
8	18.44	1.59	-0.14
9	19.75	0.96	0.32

IV.ACTUAL STANDARD DEVIATION OF LOS DISTR. AND ERRORS OF ITS ESTIMATES:

PAY GRADE	*ACTUAL STD.DEV.*	*ACT-EST(T.P. AND VOL.)*	*ACT-EST(INV. AND VOL.)*
4	1.07	-0.29	-0.10
5	1.53	-0.53	-0.40
6	4.11	-0.85	-0.45
7	3.25	-0.05	-0.16
8	2.22	-1.14	-0.97
9	3.36	1.50	0.70

NUMBER OF ADVANCEMENTS, ACTUAL AND ESTIMATED PER MODEL 0.

RATING=0 *YEAR*=1973

PG→	E4		E5		E6		E7		E8		E9	
LOS	*ACT*	*EST*	*ACT*	*EST*	*ACT*	*EST*	*ACT*	*EST*	*ACT*	*EST*	*ACT*	*EST*
1	14706	16946	234	560		4	3					
2	26394	27500	4667	8099	8	11		1	2			
3	22963	21105	15632	13961	14	19	1	2				
4	6762	5569	9263	7319	182	485	4	1	1			
5	671	814	2180	2569	1107	1512	4	2				
6	682	475	1013	730	887	1048	4					
7	753	650	1006	771	735	613	7	9				
8	257	208	881	933	622	576	6					
9	148	102	517	443	530	497	161	151				
10	54	40	280	209	441	354	166	175				
11	36	31	192	185	482	377	237	195	10	9		
12	28	30	199	236	442	296	316	288	46	54		
13	14	12	92	103	339	172	399	337	122	83	9	4
14	18	15	57	76	236	173	376	357	149	114	19	23
15	7		34	32	178	90	427	324	189	171	31	42
16	11	8	26	28	192	35	376	266	208	205	57	66
17	9	8	53	67	234	309	451	576	279	316	84	107
18	7	6	56	59	213	265	442	628	297	330	102	103
19	5	4	24	23	113	98	228	241	192	201	86	87
20	2	3	11	14	51	67	118	144	98	101	54	64
21	2	1	4	4	27	40	72	115	75	117	78	75
22		1		3	7	3	21	8	30	15	32	29
23			5	2	5	5	11	9	19	3	15	
24			1		1		6		15	11	25	19
25					2		4	7	16	10	24	21
26					2		4	10	7	9	22	19
27					1	3	7	6	13	15	17	18
28					1	2	3	4	10	10	20	13
29					2		5	3	6	8	20	8
30							1	1	2	2	10	8
31							2	1	4	3	3	2
32	73529	73528	36427	36426	7054	7054	3862	3861	1790	1787	708	708
	ACTUAL AND ESTIMATED MEAN LOS VALUES AND STANDARD DEVIATIONS.											
	2.47	2.36	3.91	3.72	9.51	8.71	15.00	15.41	17.21	17.40	20.04	19.40
	1.30	1.24	2.12	2.20	4.21	4.36	3.33	3.35	3.15	2.97	3.99	3.65

NUMBER OF ADVANCEMENTS, ACTUAL AND ESTIMATED VIA MODEL 2.
RATING=300 YEAR=1973

PG→	E4		E5		E6		E7		E8		E9	
LOS	ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST
1	217	260	2									
2	759	864	64	129								
3	875	766	374	304								
4	138	113	195	189	5	2						
5	9	3	17	22	19	19						
6	4	2	2	11	19	23						
7	9	4	9	6	12	17						
8	1	3	8	12	22	18						
9	2	1	9	8	10	14	2					
10			3	3	7	11	3	2				
11	2	1	3	2	12	9	6	5				
12			1	1	7	7	12	14				
13					2	4	7	10	5			
14	1		1	1	5	3	16	11	4	3	1	
15					6	4	18	13	4	3		1
16					4	3	11	10	3	3	1	
17					2	1	4	10	1	4	2	2
18				1	2	2	9	13	2	5	1	1
19				1	2	1	4	4	1	3	2	1
20					2	1	3	4	2	1		
21							2	1	2	3		1
22						1	1	1	1	1		
23								1				
24												
25									2			
26												
27												
28												
29												
30												
31												
32	2017	2017	688	690	138	140	98	99	27	26	7	6

ACTUAL AND ESTIMATED MEAN LOS VALUES AND STANDARD DEVIATIONS.

NUMBER OF ADVANCEMENTS, ACTUAL AND ESTIMATED VIA MODEL 2.
RATING=1500 *YEAR*=1973

PG→	E4		E5		E6		E7		E8		E9	
LOS	*ACT*	*EST*	*ACT*	*EST*	*ACT*	*EST*	*ACT*	*EST*	*ACT*	*EST*	*ACT*	*EST*
1	876	1222	7	40								
2	1585	1990	195	608								
3	1793	1273	1221	979	2							
4	429	223	647	402	12	3						
5	22	21	64	94	3	5						
6	18	5	16	23	10	22						
7	30	20	28	24	23	17						
8	2	3	33	32	25	38						
9	1		12	12	21	21						
10	3		4	7	20	16	1	1				
11			1	6	17	17	10	4		1		
12			1	3	13	10	15	11	1	2		
13			3	2	11	8	16	13	1	2		
14			2	2	8	7	16	22	11	8	1	1
15	1		2	1	6	5	22	31	8	12	1	
16			1	1	7	5	24	20	17	13	1	2
17					3	6	24	17	16	23	5	1
18			1	2	1	5	11	19	20	14	7	8
19					1	1	10	10	11	7	4	6
20				1	2		6	6	3	3	4	5
21					1	1	4	5	1	4	1	4
22					1					1		1
23					1	1		1	1		1	1
24											1	
25							1	1		1	3	1
26											1	1
27												
28								1	2			
29							1				1	
30												
31												
32	4760	4757	2238	2239	188	188	161	162	92	91	31	31

ACTUAL AND ESTIMATED MEAN LOS VALUES AND STANDARD DEVIATIONS.

2.45	2.15	3.50	3.24	9.96	9.89	15.53	15.86	17.09	16.79	19.68	19.39
1.04	0.94	1.33	1.60	3.80	3.60	2.87	2.75	2.50	2.27	3.45	2.42

NUMBER OF ADVANCEMENTS, ACTUAL AND ESTIMATED VIA MODEL 2.
RATING=1800 YEAR=1973

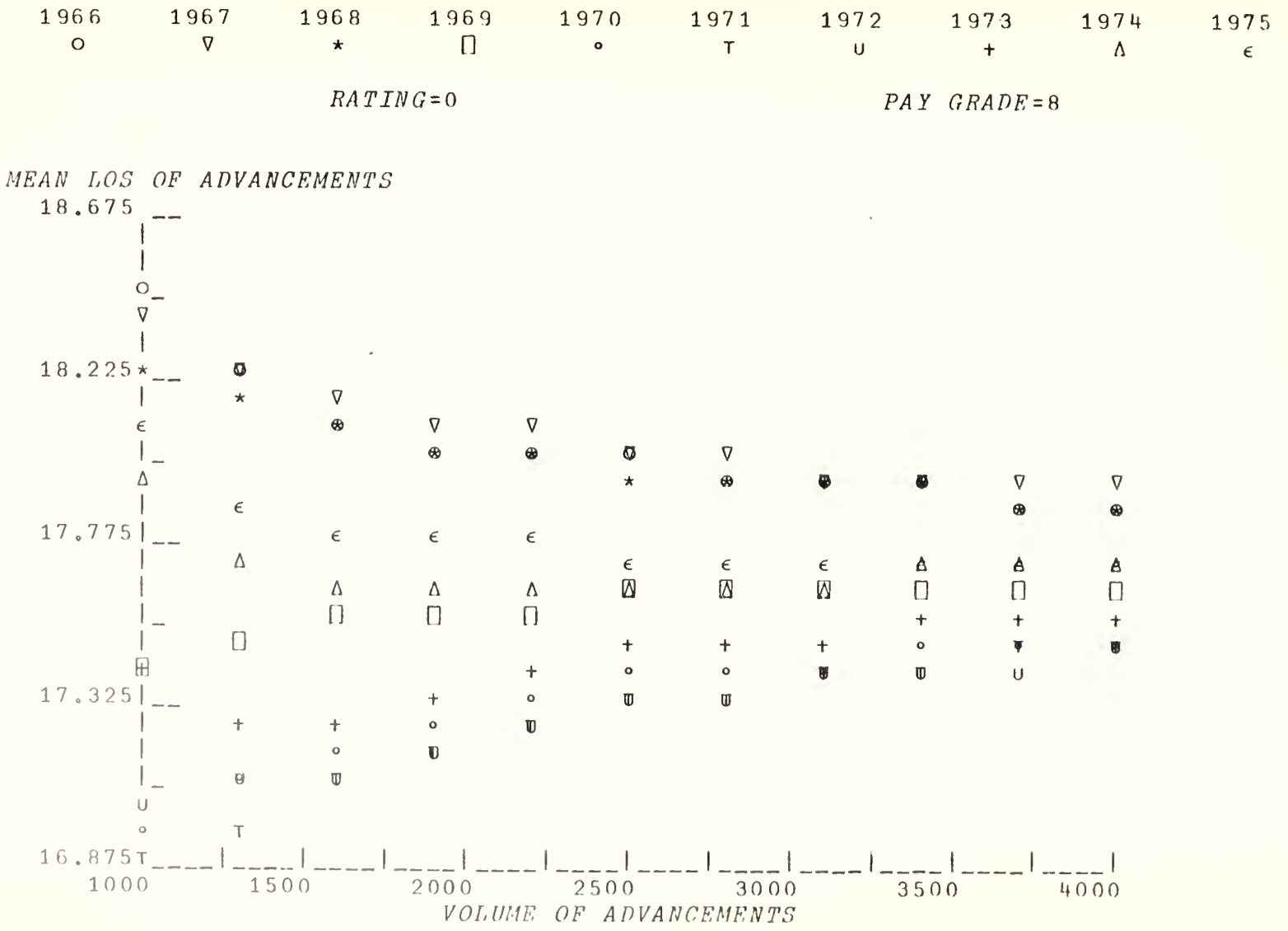
PG→	E4		E5		E6		E7		E8		E9	
LOS	ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST	ACT	EST
1	483	469	3	9								
2	710	717	187	263								
3	366	360	458	332								
4	60	70	157	118	3	5						
5	4	4	26	51	13	9						
6	5	6	12	38	24	22						
7	9	10	16	29	19	25	1					
8	1		24	20	24	17						
9	1	1	6	8	17	22	1	2				
10			4	6	15	20	1	4				
11			2	9	25	22	2	7				
12			3	3	13	15	6	5	1	1		
13				5	12	13	10	14	4	2		
14				4	14	12	7	5	6	3	1	
15				1	6	5	6	6	5	5		1
16					7	8	23	17	6	9	3	2
17					6	3	9	10	13	16	7	6
18					5	4	17	13	11	11	5	6
19			1		10	10	9	6	7	5	10	4
20			1		2	2	2	4	8	6		4
21					1			1	1	4		2
22									2	2	1	2
23									2	1	1	
24										1		1
25										1		
26											1	
27						1						1
28												
29												
30												
31											1	
32	1639	1637	900	896	216	215	94	94	66	67	30	29

ACTUAL AND ESTIMATED MEAN LOS VALUES AND STANDARD DEVIATIONS.

2.06	2.08	3.42	3.63	10.54	10.46	15.70	15.19	17.30	17.67	18.77	18.97

APPENDIX 12

MEAN LOS VALUES OF ADVANCEMENTS AS PROVIDED BY MODEL 2 VS VOLUMES OF ADVANCEMENTS WITH INVENTORY LOS DISTRIBUTIONS FIXED AT EACH OF THE FOLLOWING YEARS.

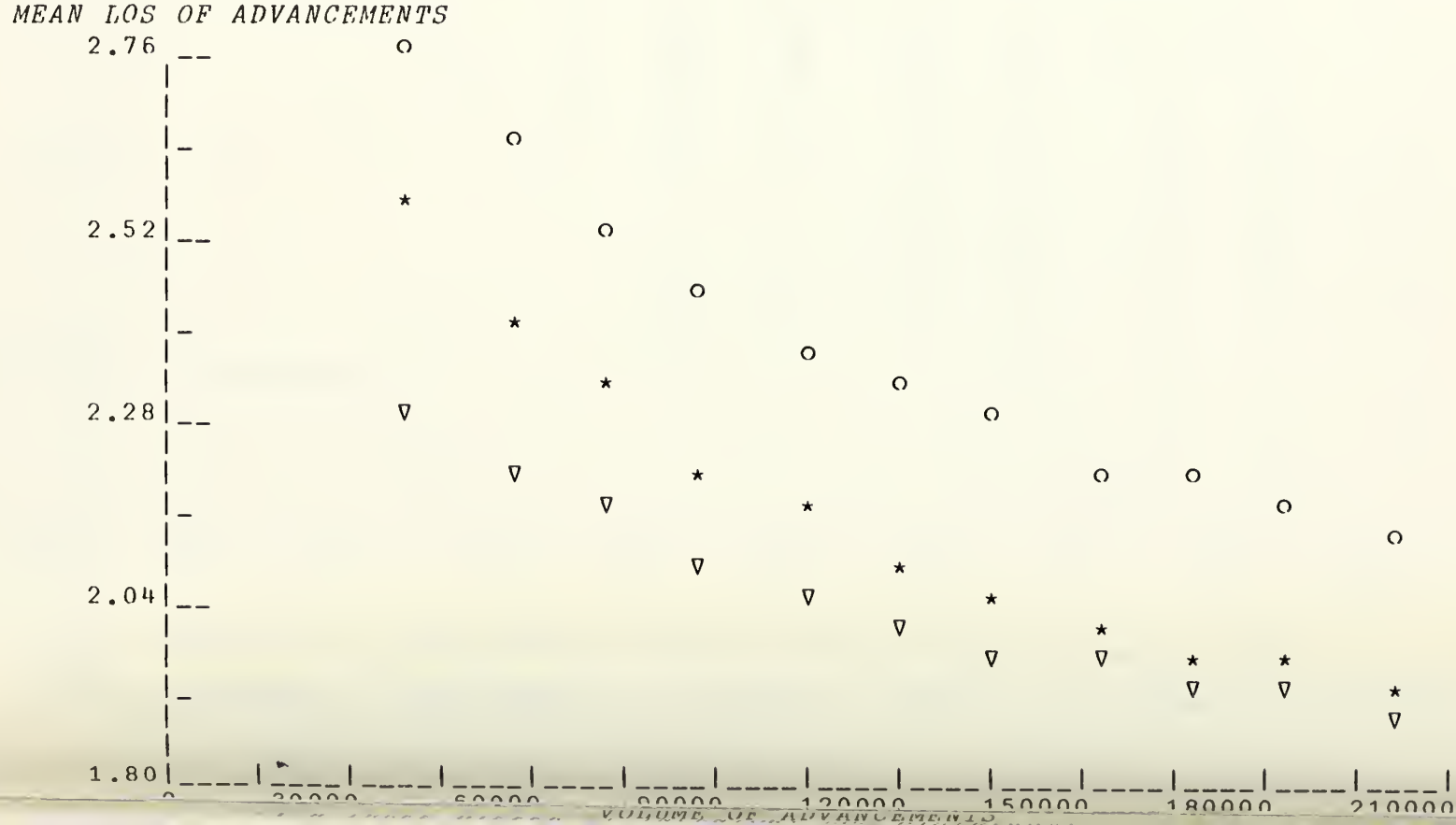


APPENDIX 13

MEAN LOS VALUES OF ADVANCEMENTS, AS PROVIDED BY MODEL 2, VS VOLUMES OF ADVANCEMENTS WITH THREE DIFFERENT INVENTORY LOS DISTRIBUTIONS:

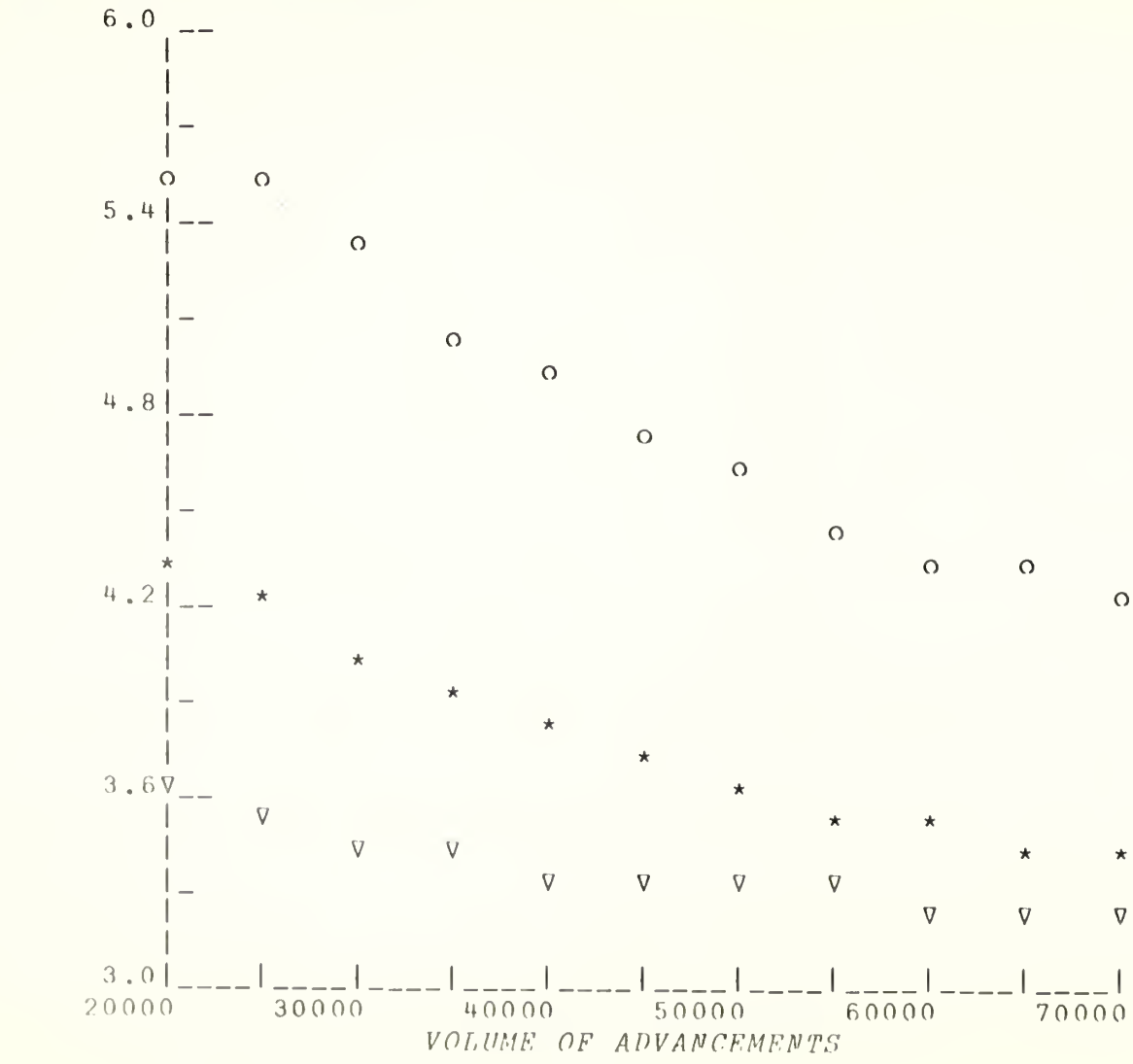
* 1975 *INV. LOS DISTR.*
o 1966 *YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN*
∇ 1970 *YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN*

RATING=0 *PAY GRADE=4*



* 1975 *INV. LOS DISTR.*
o 1966 *YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN*
∇ 1971 *YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN*

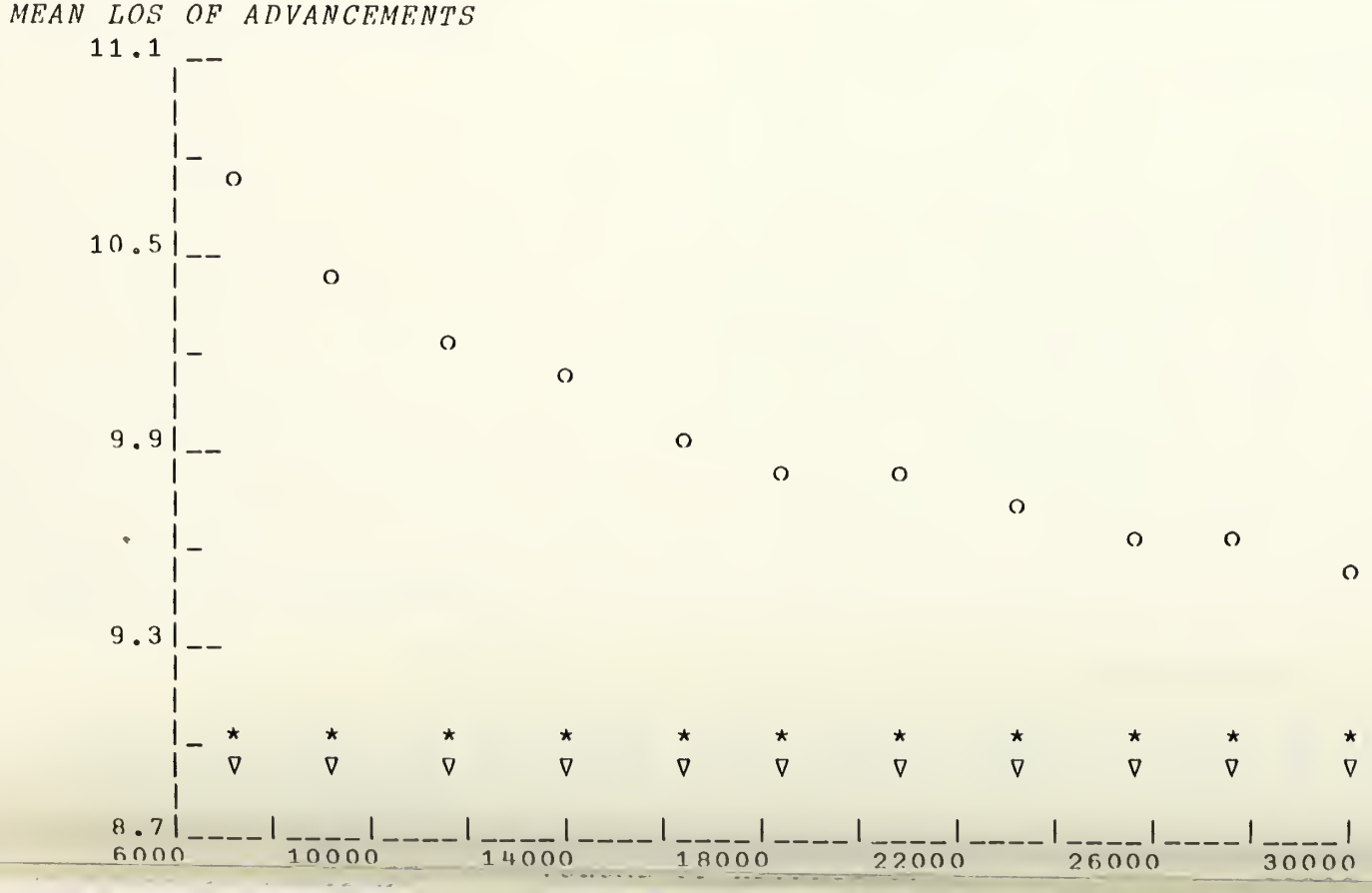
RATING=0 *PAY GRADE=5*



MEAN LOS VALUES OF ADVANCEMENTS, AS PROVIDED BY MODEL 2, VS. VOLUMES OF ADVANCEMENTS WITH THREE DIFFERENT INVENTORY LOS DISTRIBUTIONS:

* 1975 INV. LOS DISTR.
o 1966 YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN
∇ 1970 YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN

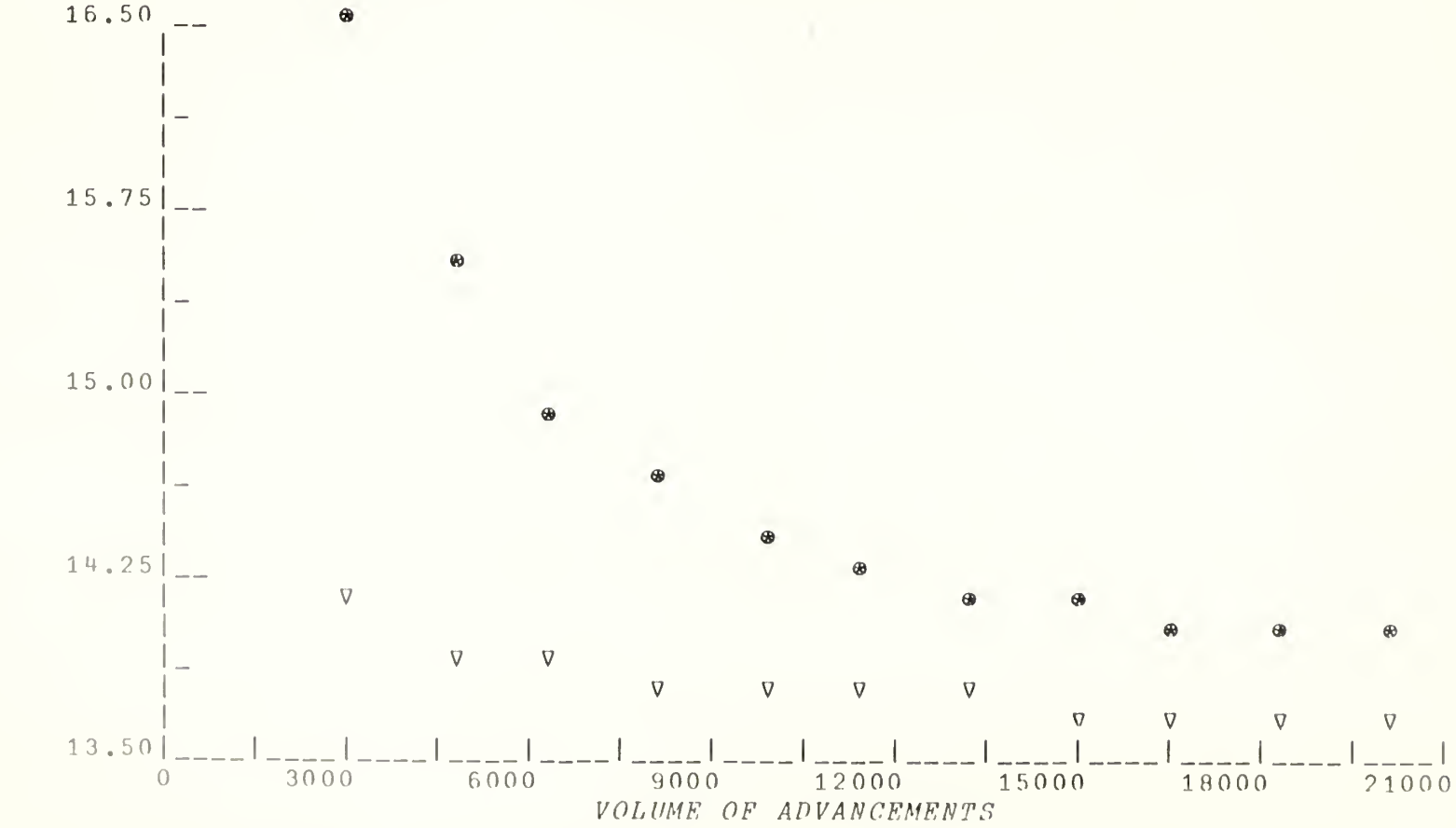
RATING=0 PAY GRADE=6



MEAN LOS VALUES OF ADVANCEMENTS, AS PROVIDED BY MODEL 2, VS. VOLUMES OF ADVANCEMENTS WITH THREE DIFFERENT INVENTORY LOS DISTRIBUTIONS:

* 1975 INV. LOS DISTR.
o 1975 YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN
∇ 1969 YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN

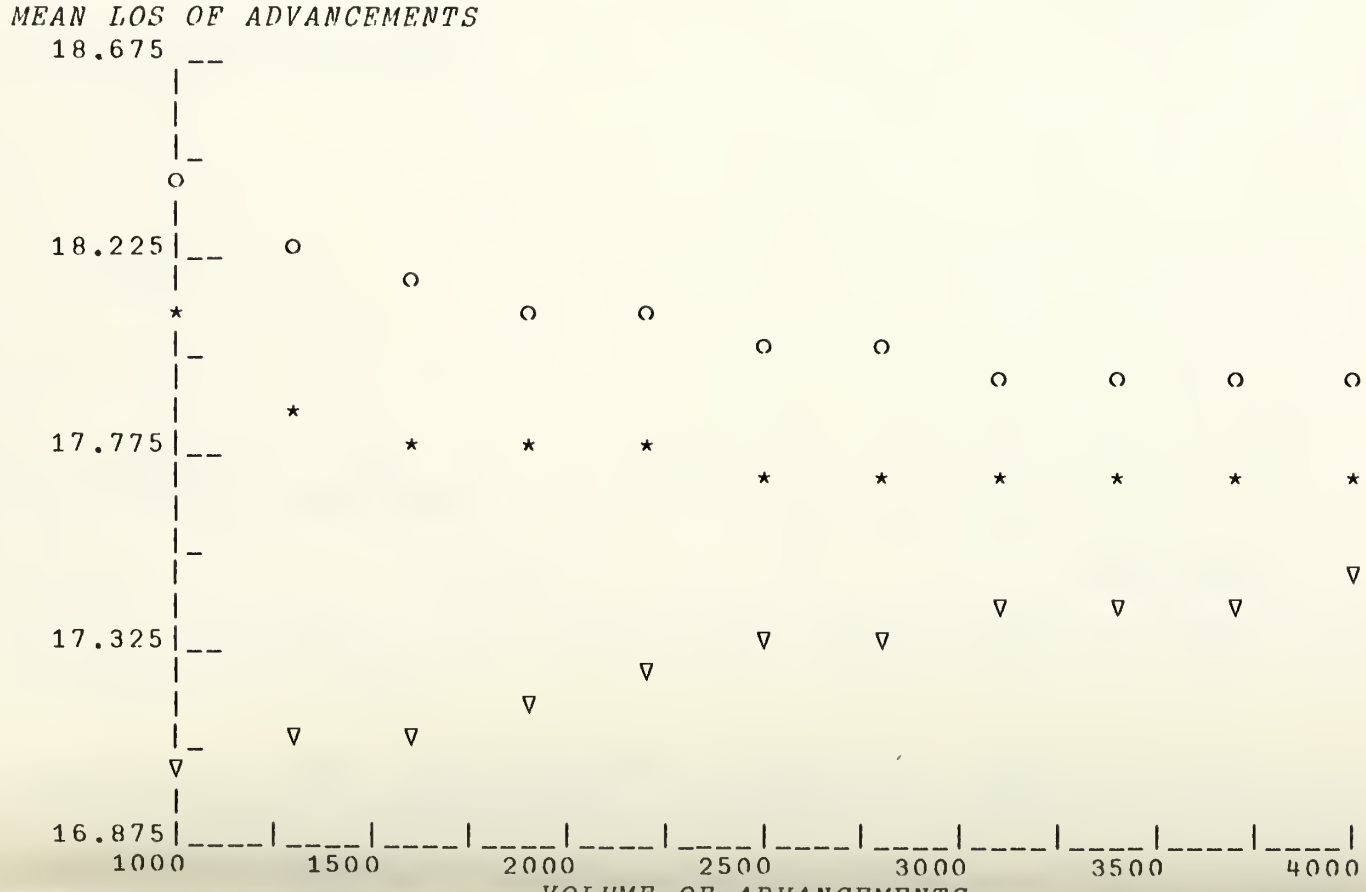
RATING=0 PAY GRADE=7



MEAN LOS VALUES OF ADVANCEMENTS, AS PROVIDED BY MODEL 2, VS. VOLUMES OF ADVANCEMENTS WITH THREE DIFFERENT INVENTORY LOS DISTRIBUTIONS:

* 1975 INV. LOS DISTR.
o 1967 YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN
∇ 1972 YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN

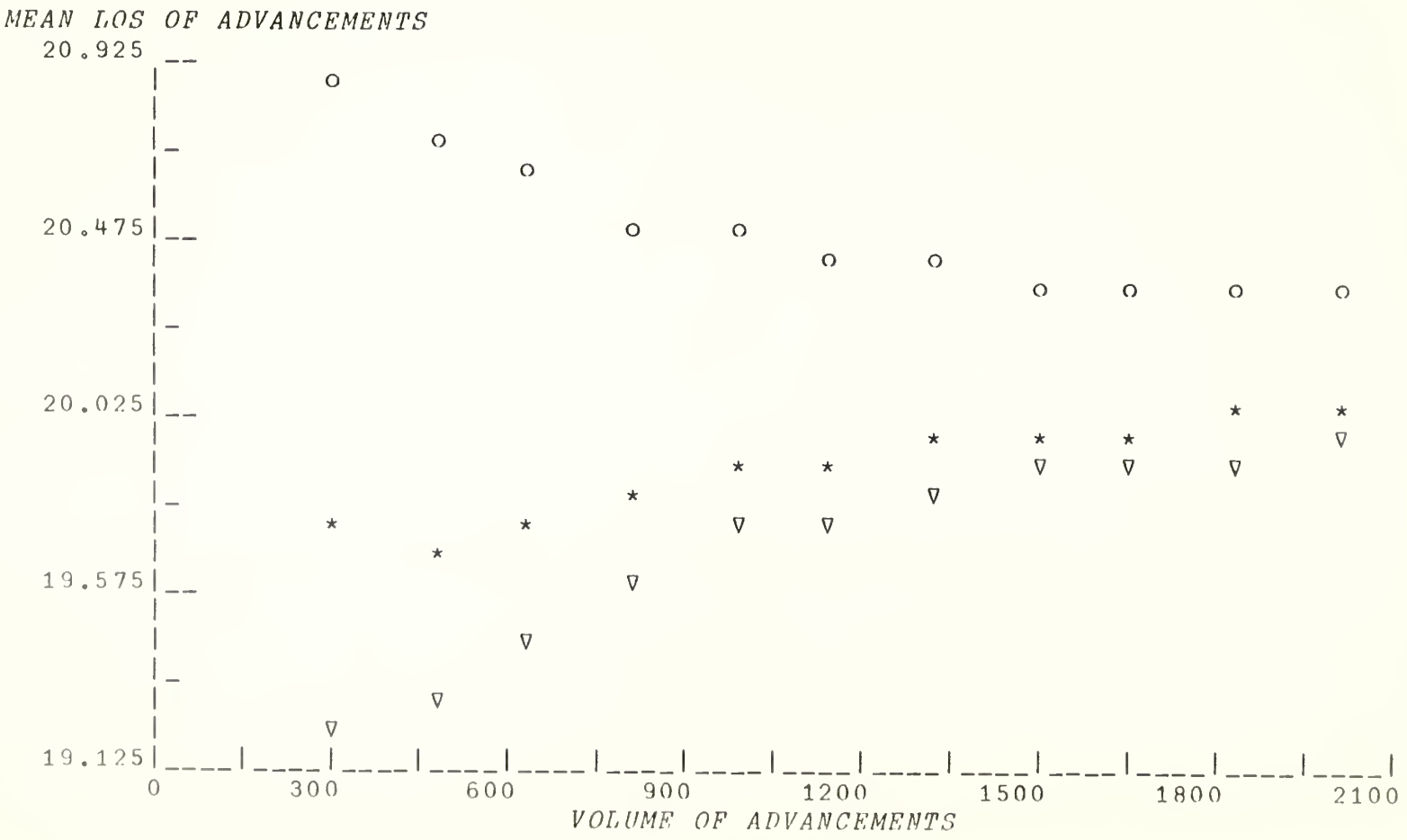
RATING=0 PAY GRADE=8



MEAN LOS VALUES OF ADVANCEMENTS, AS PROVIDED BY MODEL 2, VS. VOLUMES OF ADVANCEMENTS WITH THREE DIFFERENT INVENTORY LOS DISTRIBUTIONS:

* 1975 INV. LOS DISTR.
o 1967 YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN
∇ 1973 YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN

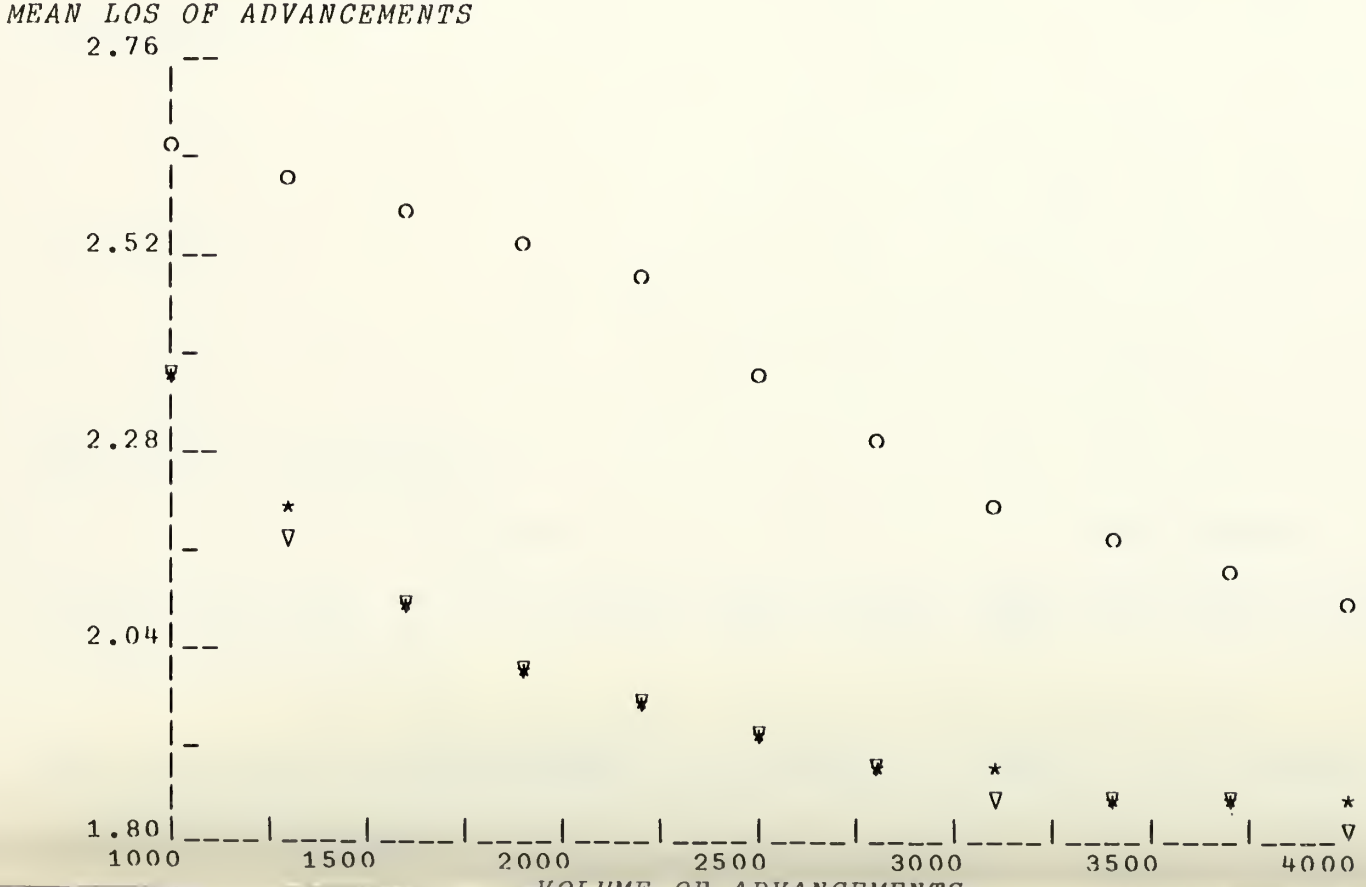
RATING=0 PAY GRADE=9



MEAN LOS VALUES OF ADVANCEMENTS, AS PROVIDED BY MODEL 2, VS. VOLUMES OF ADVANCEMENTS WITH THREE DIFFERENT INVENTORY LOS DISTRIBUTIONS:

* 1975 INV. LOS DISTR.
o 1968 YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN
∇ 1974 YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN

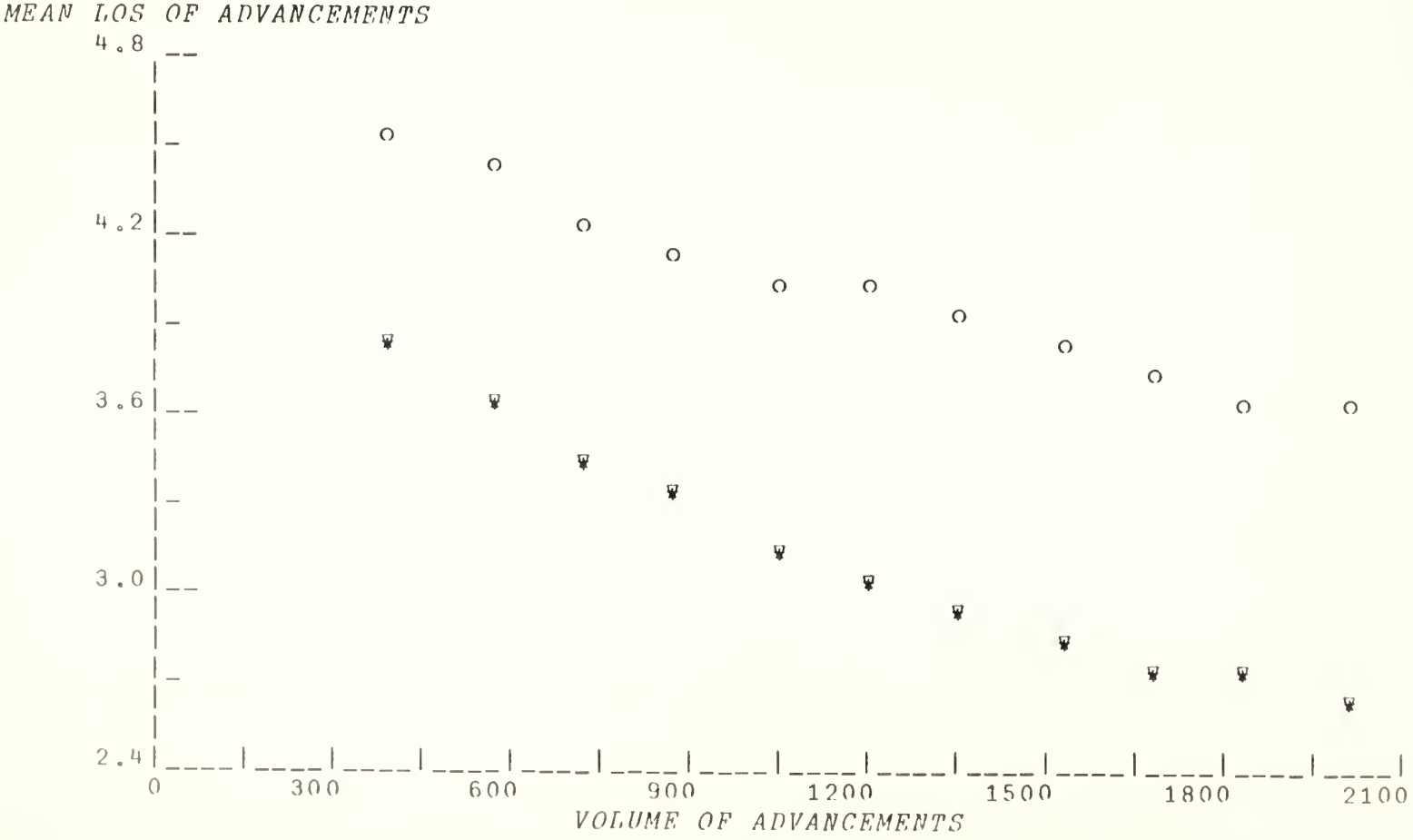
RATING=300 PAY GRADE=4



MEAN LOS VALUES OF ADVANCEMENTS, AS PROVIDED BY MODEL 2, VS. VOLUMES OF ADVANCEMENTS WITH THREE DIFFERENT INVENTORY LOS DISTRIBUTIONS:

★ 1975 INV. LOS DISTR.
○ 1966 YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN
▽ 1975 YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN

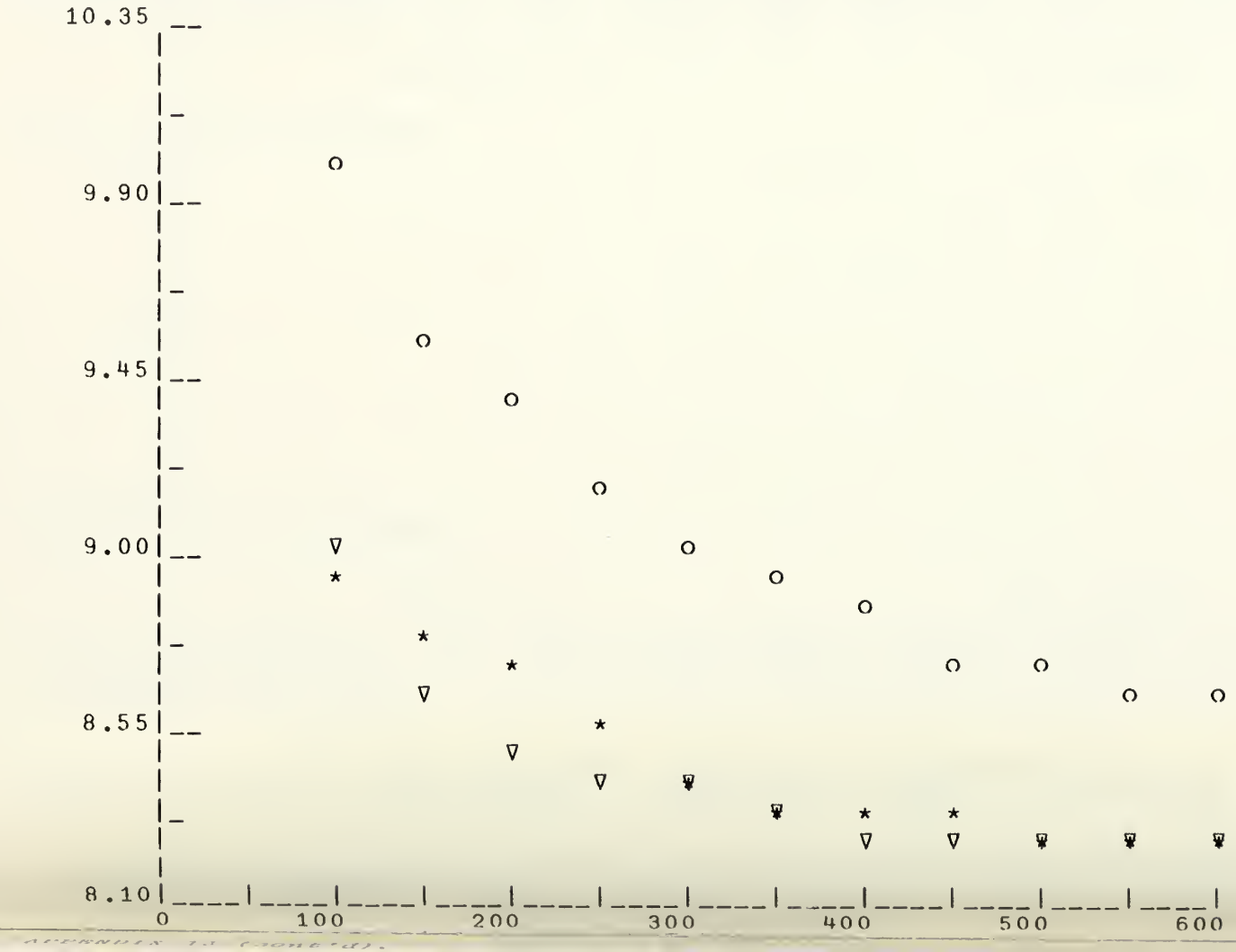
RATING=300 PAY GRADE=5



MEAN LOS VALUES OF ADVANCEMENTS, AS PROVIDED BY MODEL 2, VS. VOLUMES OF ADVANCEMENTS WITH THREE DIFFERENT INVENTORY LOS DISTRIBUTIONS:

* 1975 INV. LOS DISTR.
o 1968 YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN
∇ 1974 YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN

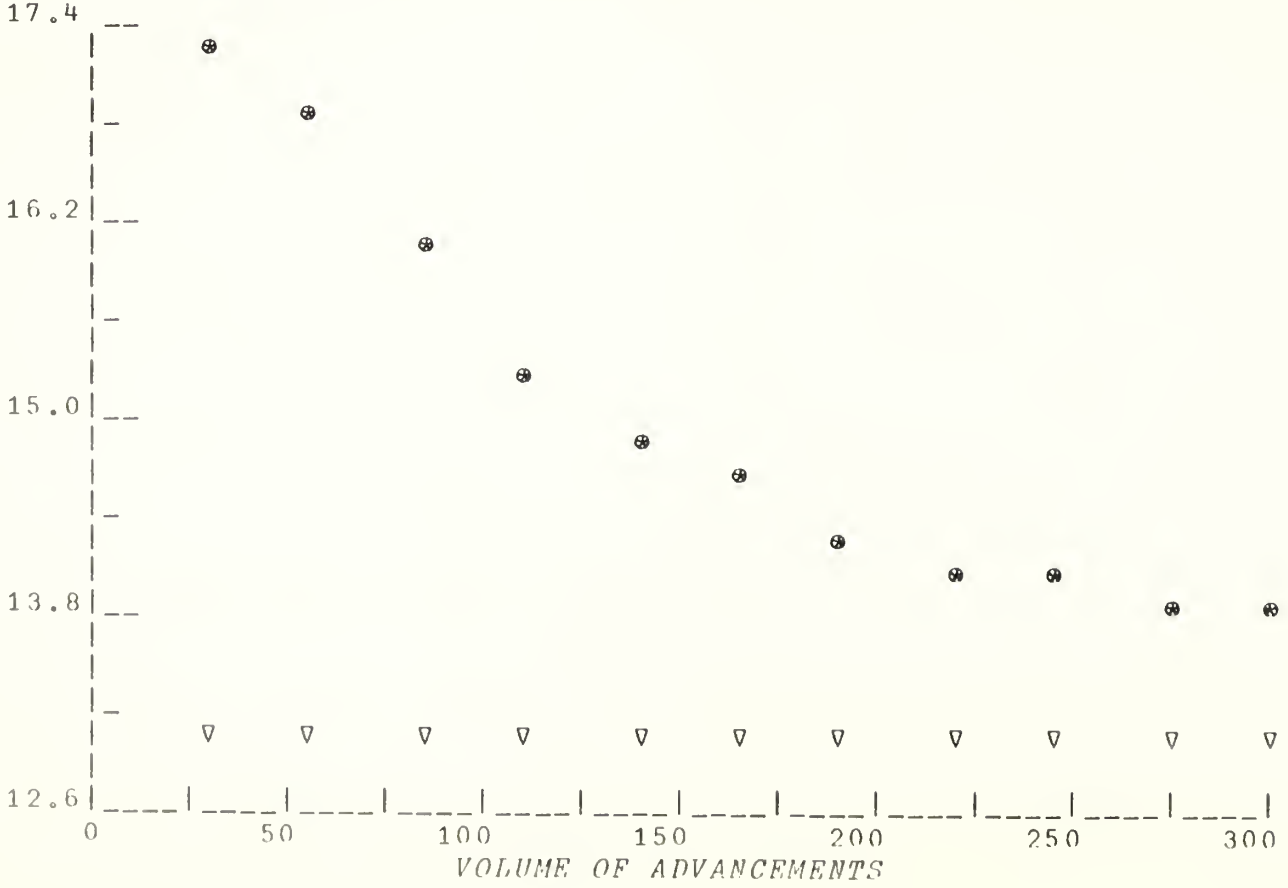
RATING=300 PAY GRADE=6



MEAN LOS VALUES OF ADVANCEMENTS, AS PROVIDED BY MODEL 2, VS. VOLUMES OF ADVANCEMENTS WITH THREE DIFFERENT INVENTORY LOS DISTRIBUTIONS:

* 1975 INV. LOS DISTR.
o 1975 YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN
∇ 1968 YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN

RATING=300 PAY GRADE=7

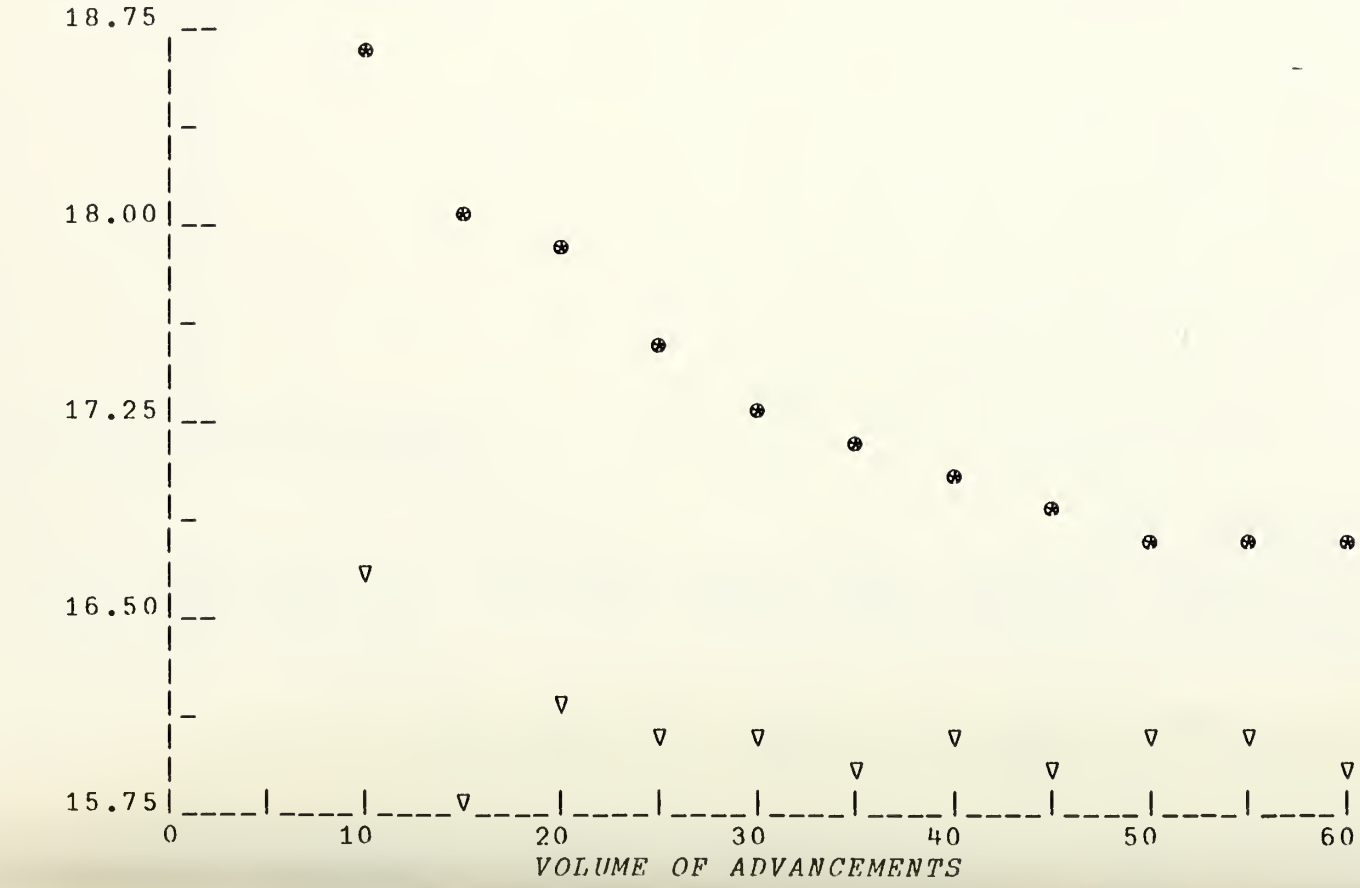


APPENDIX 13 (cont'd).

MEAN LOS VALUES OF ADVANCEMENTS, AS PROVIDED BY MODEL 2, VS. VOLUMES OF ADVANCEMENTS WITH THREE DIFFERENT INVENTORY LOS DISTRIBUTIONS:

* 1975 *INV. LOS DISTR.*
o 1975 *YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN*
∇ 1969 *YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN*

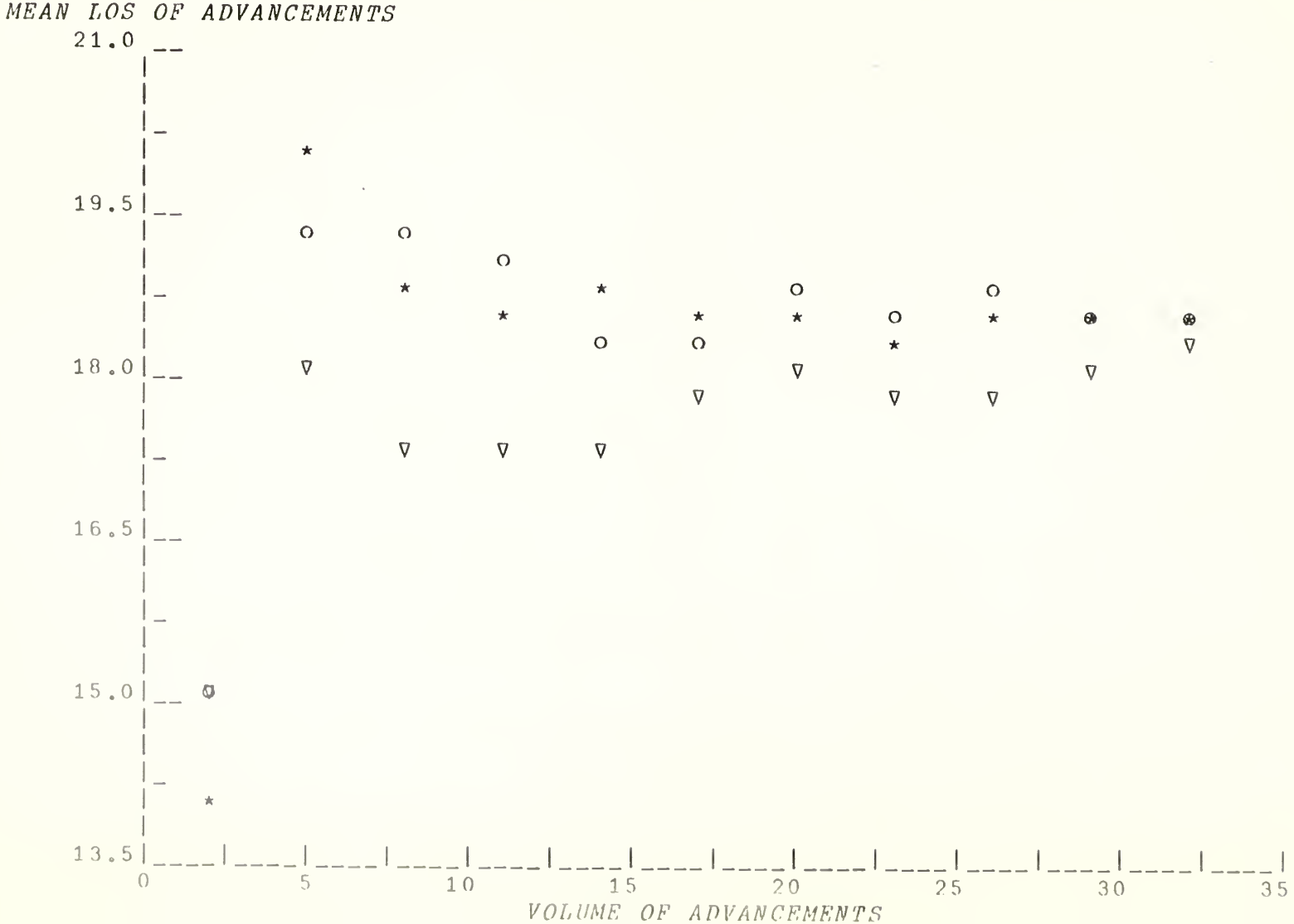
RATING=300 *PAY GRADE*=8



MEAN LOS VALUES OF ADVANCEMENTS, AS PROVIDED BY MODEL 2, VS. VOLUMES OF ADVANCEMENTS WITH THREE DIFFERENT INVENTORY LOS DISTRIBUTIONS:

* 1975 *INV. LOS DISTR.*
o 1967 *YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN*
∇ 1970 *YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN*

RATING=300 *PAY GRADE*=9

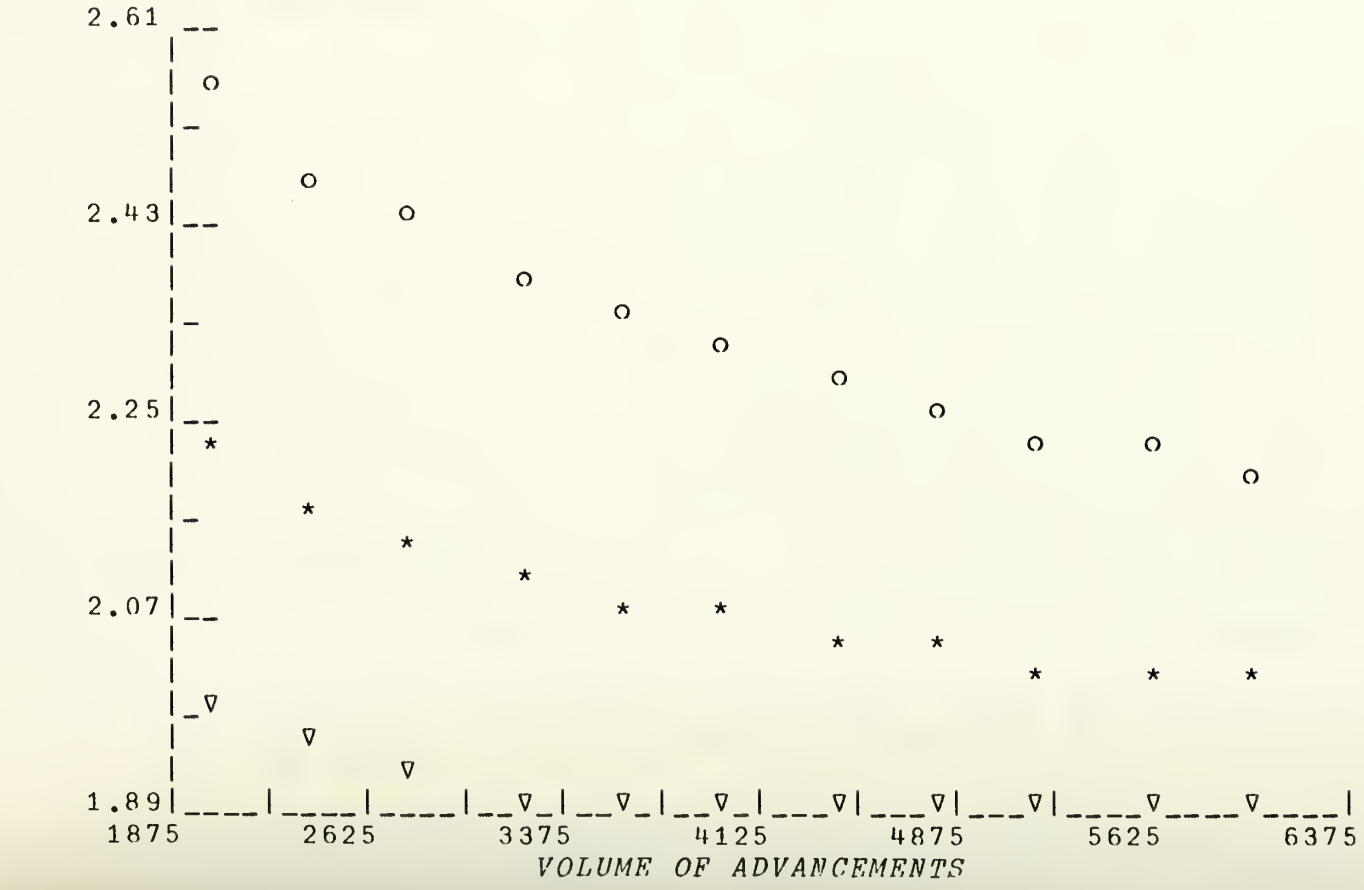


APPENDIX 13 (cont'd).

MEAN LOS VALUES OF ADVANCEMENTS, AS PROVIDED BY MODEL 2, VS. VOLUMES OF ADVANCEMENTS WITH THREE DIFFERENT INVENTORY LOS DISTRIBUTIONS:

* 1975 *INV. LOS DISTR.*
o 1966 *YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN*
∇ 1971 *YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN*

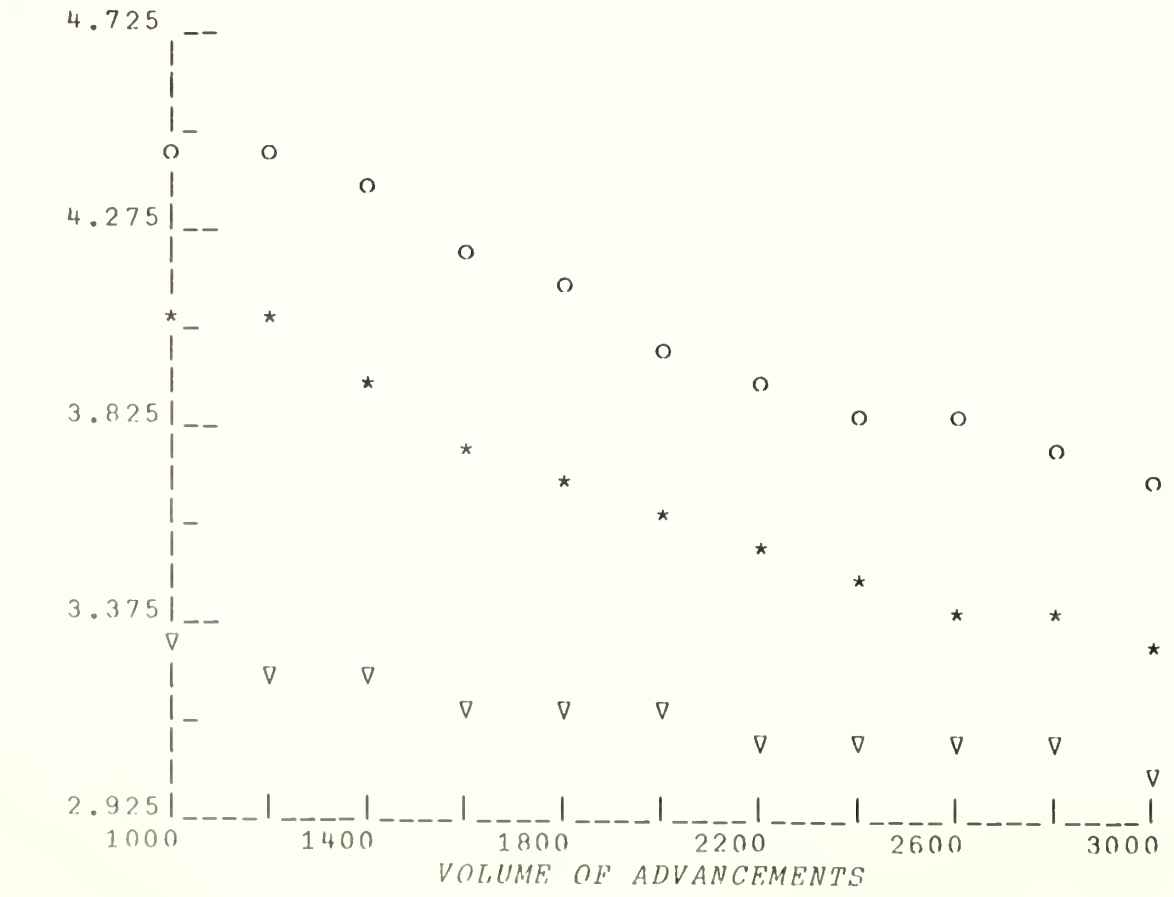
RATING=1500 *PAY GRADE*=4



MEAN LOS VALUES OF ADVANCEMENTS, AS PROVIDED BY MODEL 2, VS. VOLUMES OF ADVANCEMENTS WITH THREE DIFFERENT INVENTORY LOS DISTRIBUTIONS:

* 1975 INV. LOS DISTR.
o 1966 YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN
∇ 1971 YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN

RATING=1500 PAY GRADE=5

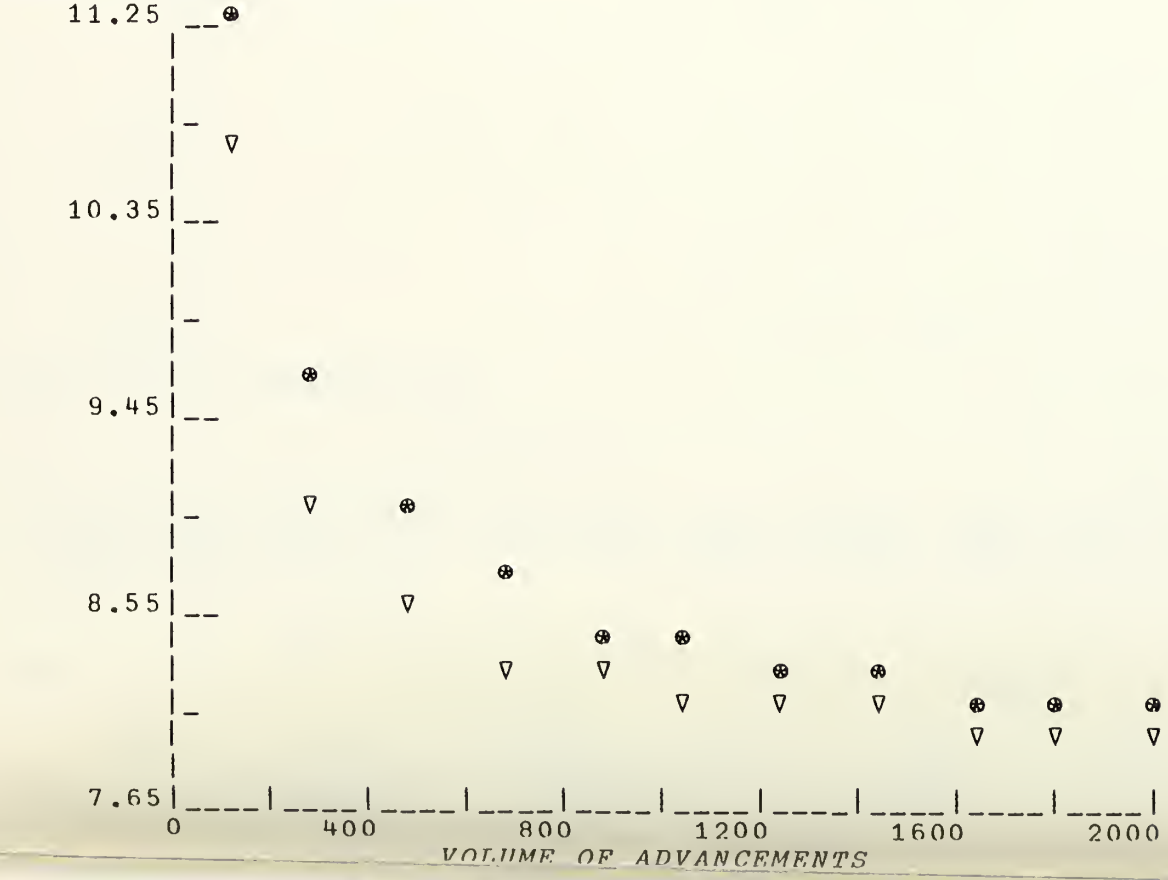


APPENDIX 13 (cont'd).

MEAN LOS VALUES OF ADVANCEMENTS, AS PROVIDED BY MODEL 2, VS. VOLUMES OF ADVANCEMENTS WITH THREE DIFFERENT INVENTORY LOS DISTRIBUTIONS:

* 1975 *INV. LOS DISTR.*
o 1975 *YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN*
∇ 1970 *YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN*

RATING=1500 *PAY GRADE*=6



APPENDIX 13 (cont'd).

MEAN LOS VALUES OF ADVANCEMENTS, AS PROVIDED BY MODEL 2, VS. VOLUMES OF ADVANCEMENTS WITH THREE DIFFERENT INVENTORY LOS DISTRIBUTIONS:

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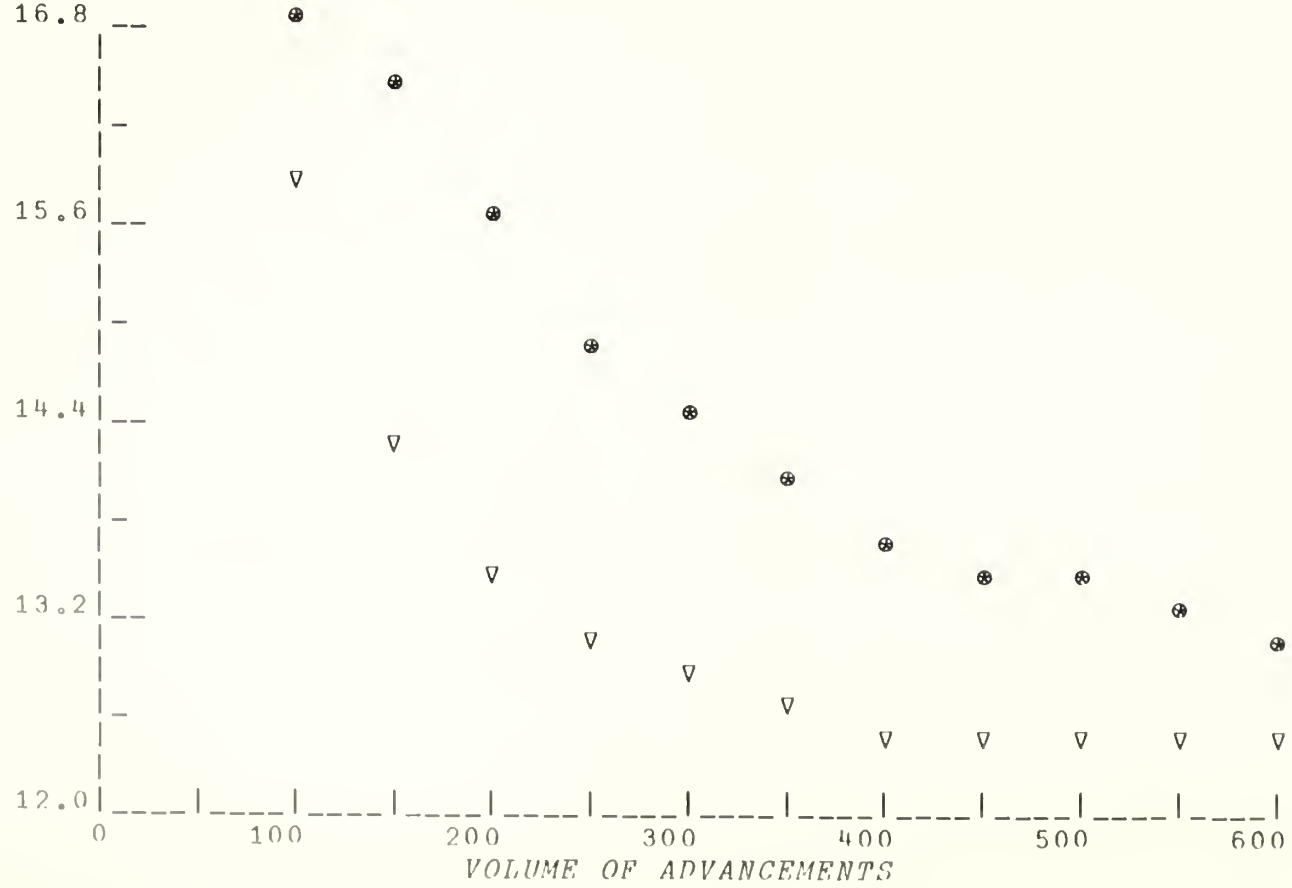
∇ 1967 *YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN*

RATING=1500 *PAY GRADE*=7



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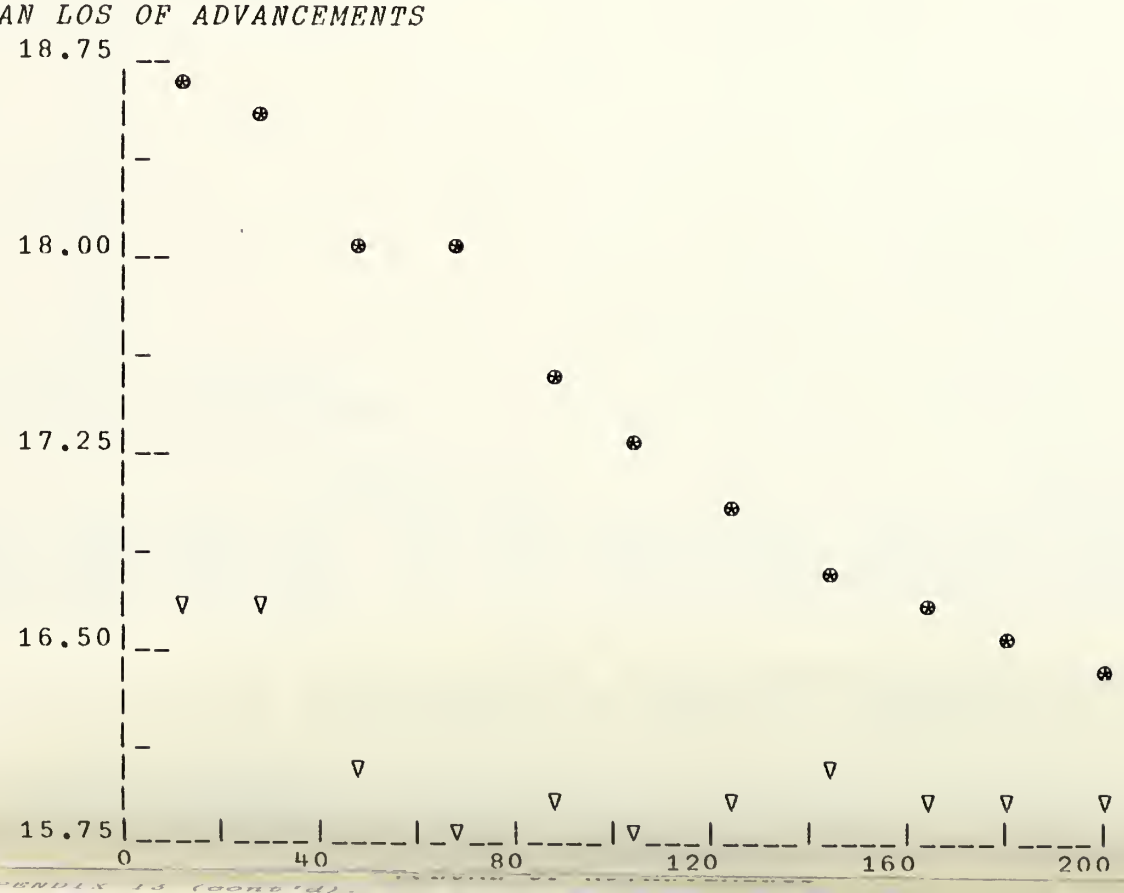
o 1975 YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN
∇ 1970 YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN

RATING=1500 PAY GRADE=8



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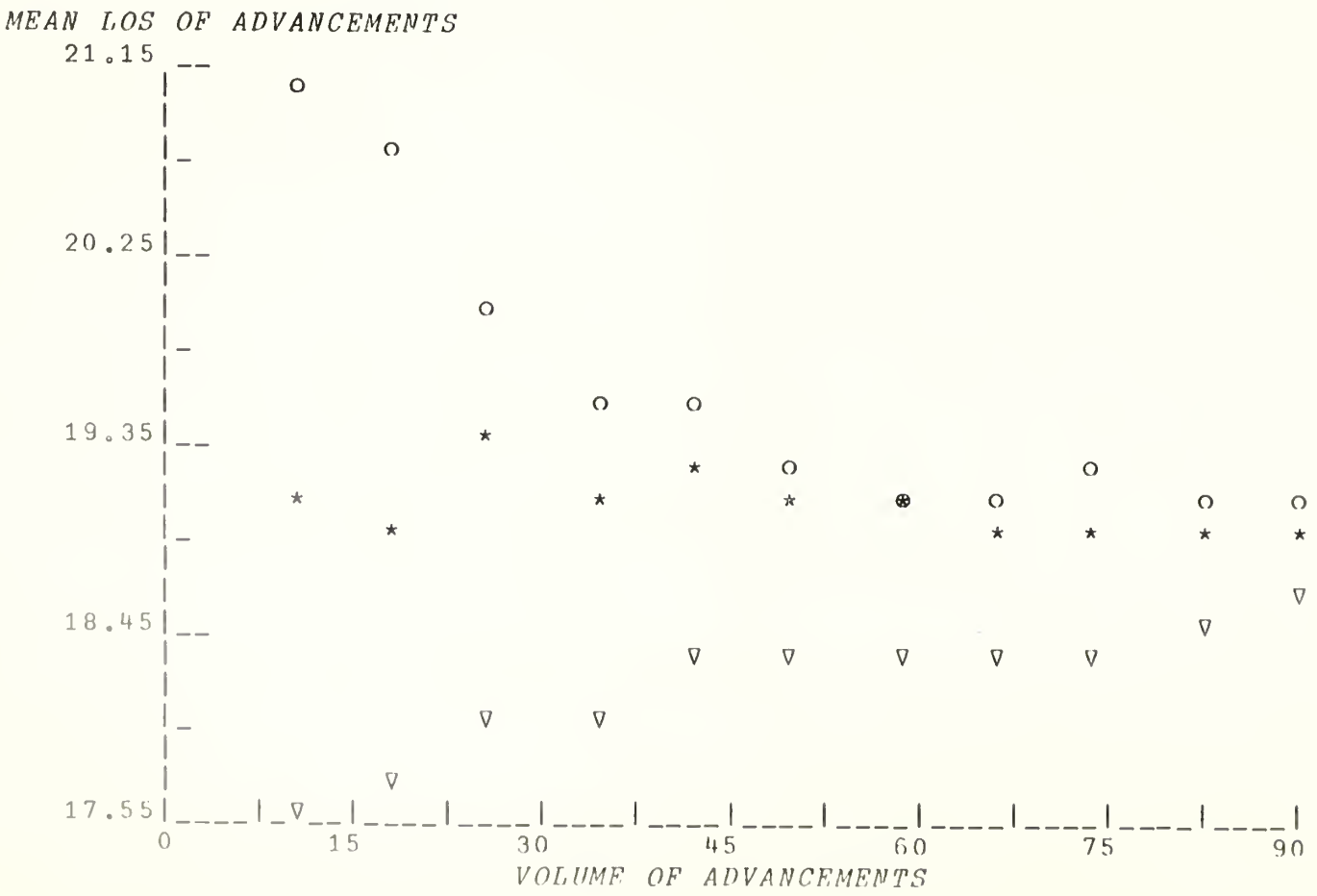
∇ 1970 YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN

RATING=1500 PAY GRADE=9



APPENDIX 13 (cont'd).

MEAN LOS VALUES OF ADVANCEMENTS, AS PROVIDED BY MODEL 2, VS. VOLUMES OF ADVANCEMENTS WITH THREE DIFFERENT INVENTORY LOS DISTRIBUTIONS:

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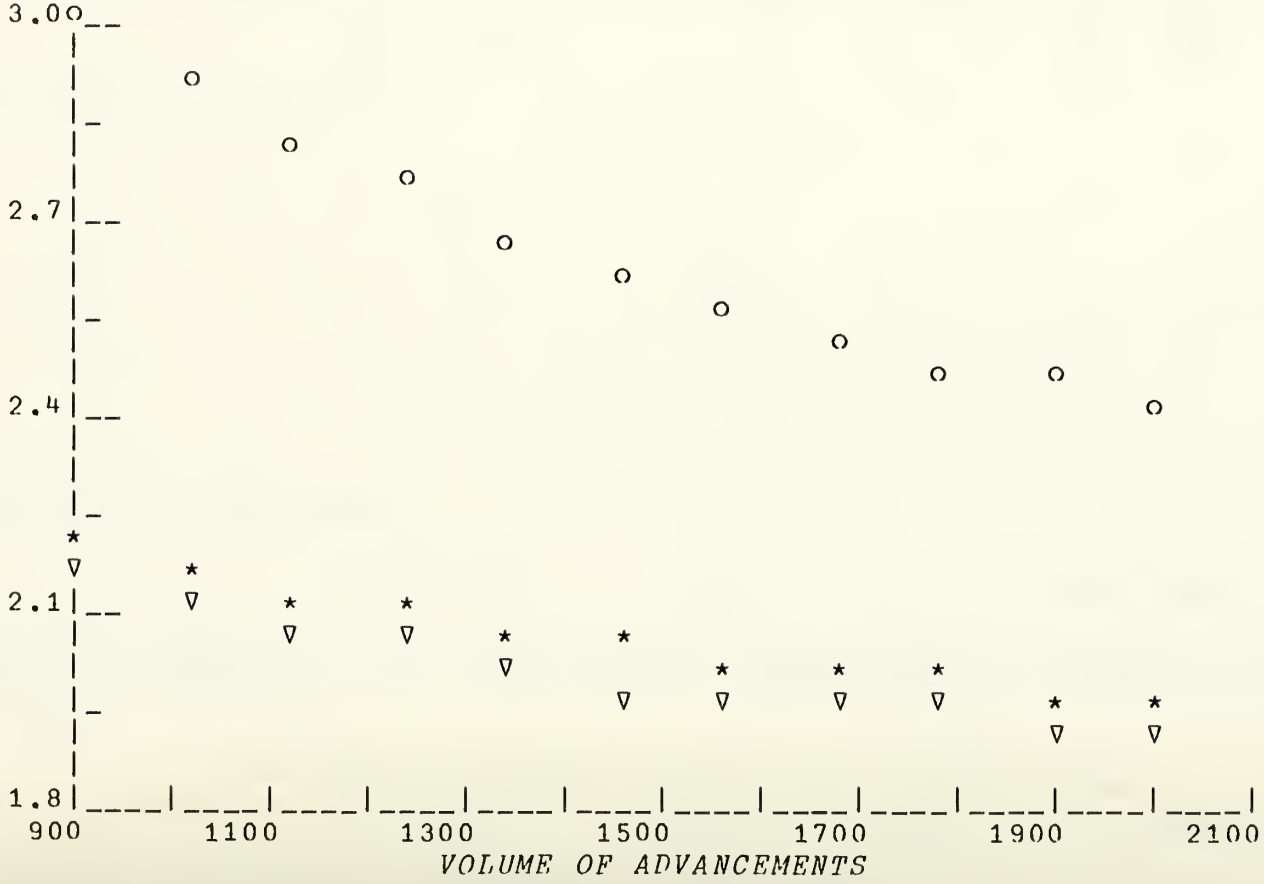
∇ 1974 *YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN*

RATING=1800 *PAY GRADE*=4



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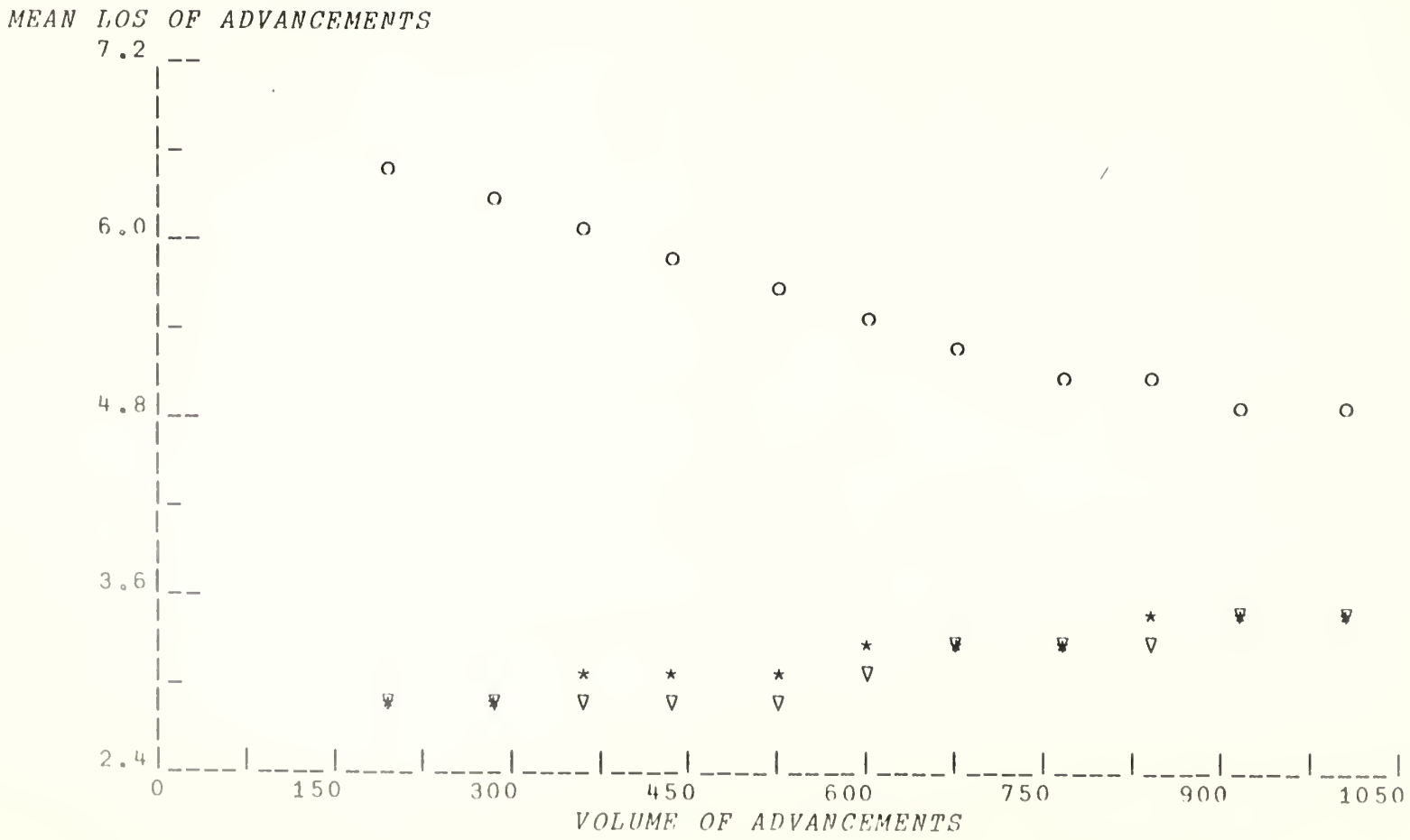
o 1967 YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN
∇ 1974 YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN

RATING=1800 PAY GRADE=5



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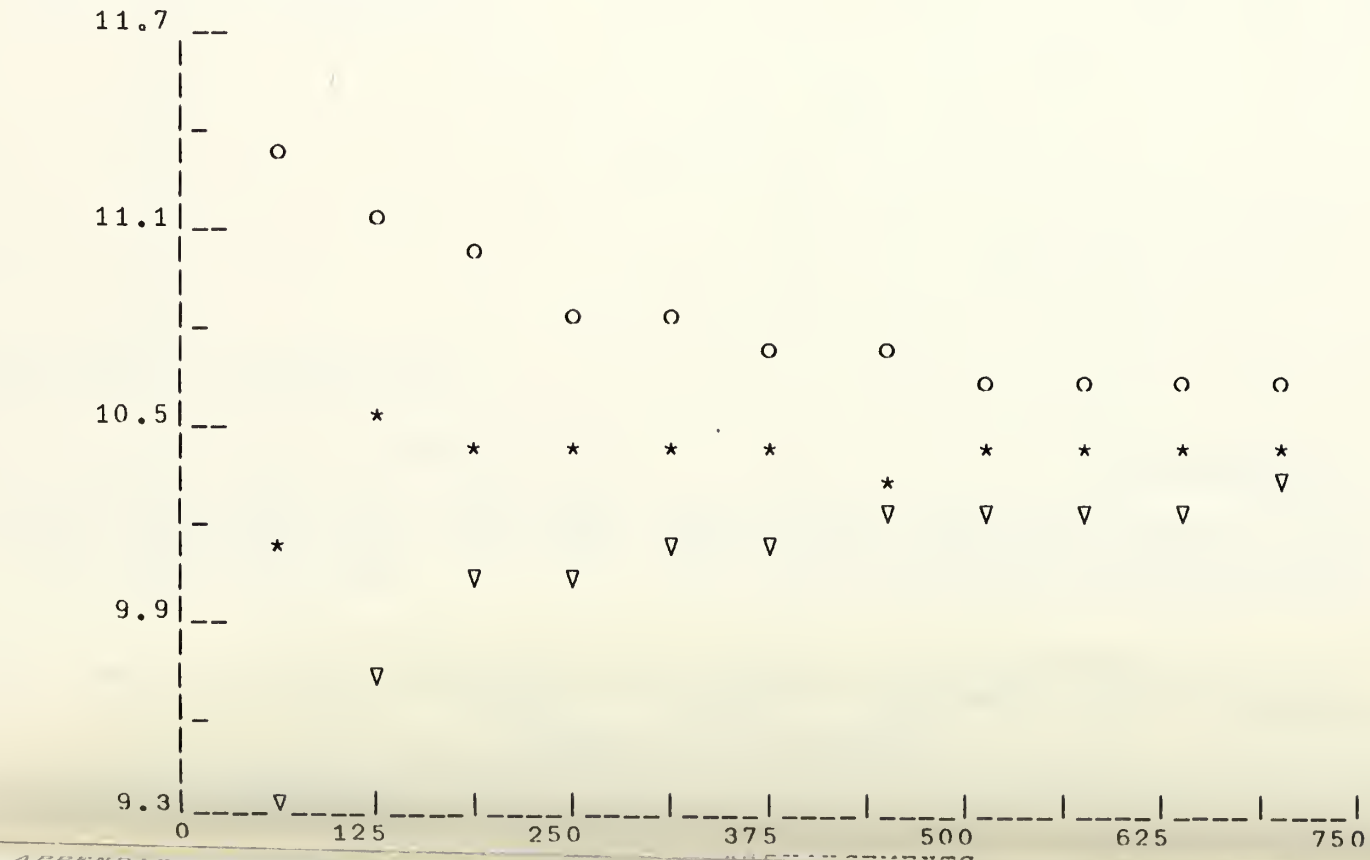
o 1968 YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN
∇ 1974 YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN

RATING=1800 PAY GRADE=6



APPENDIX 13 (cont'd).

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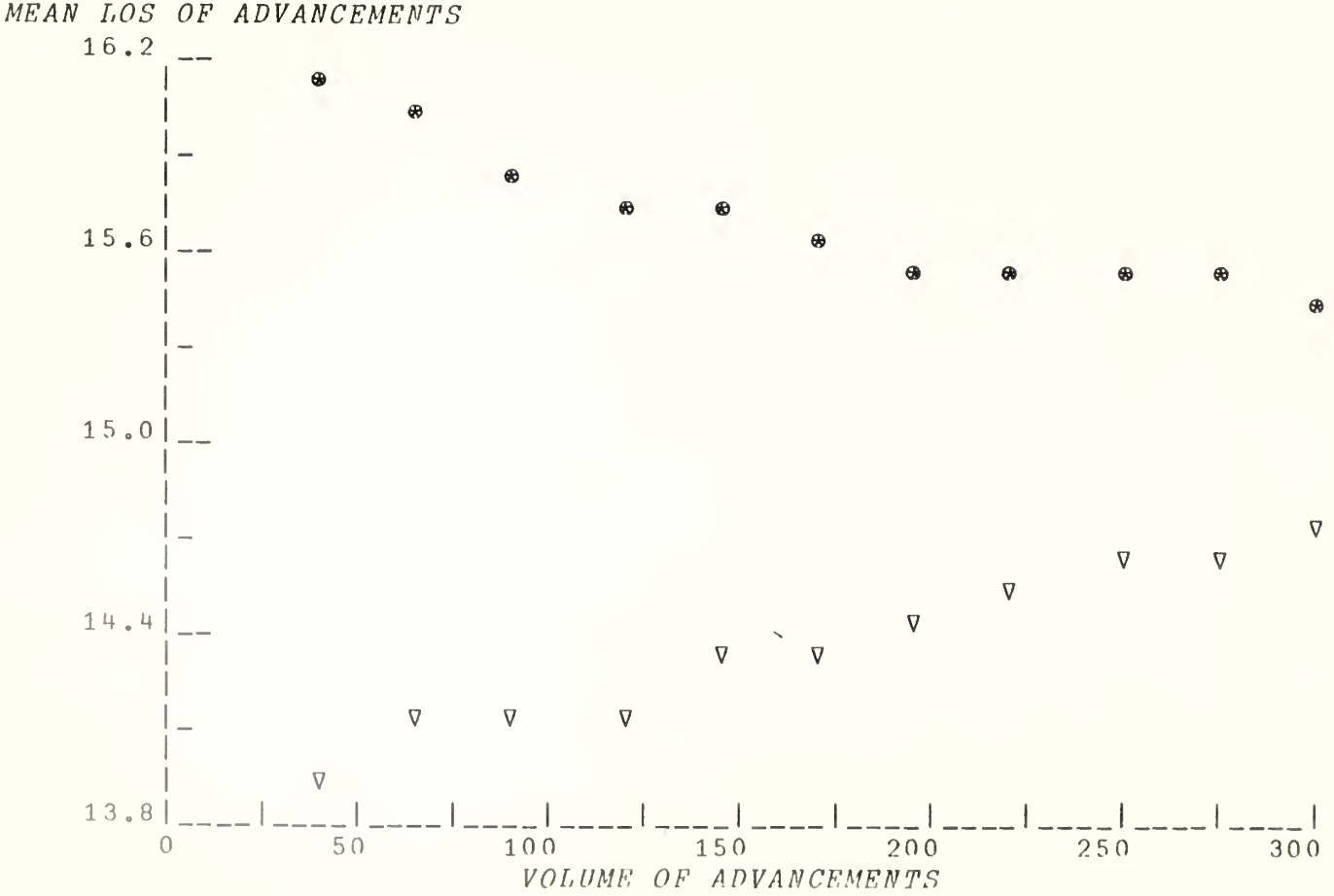
∇ 1968 YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN

RATING=1800 PAY GRADE=7



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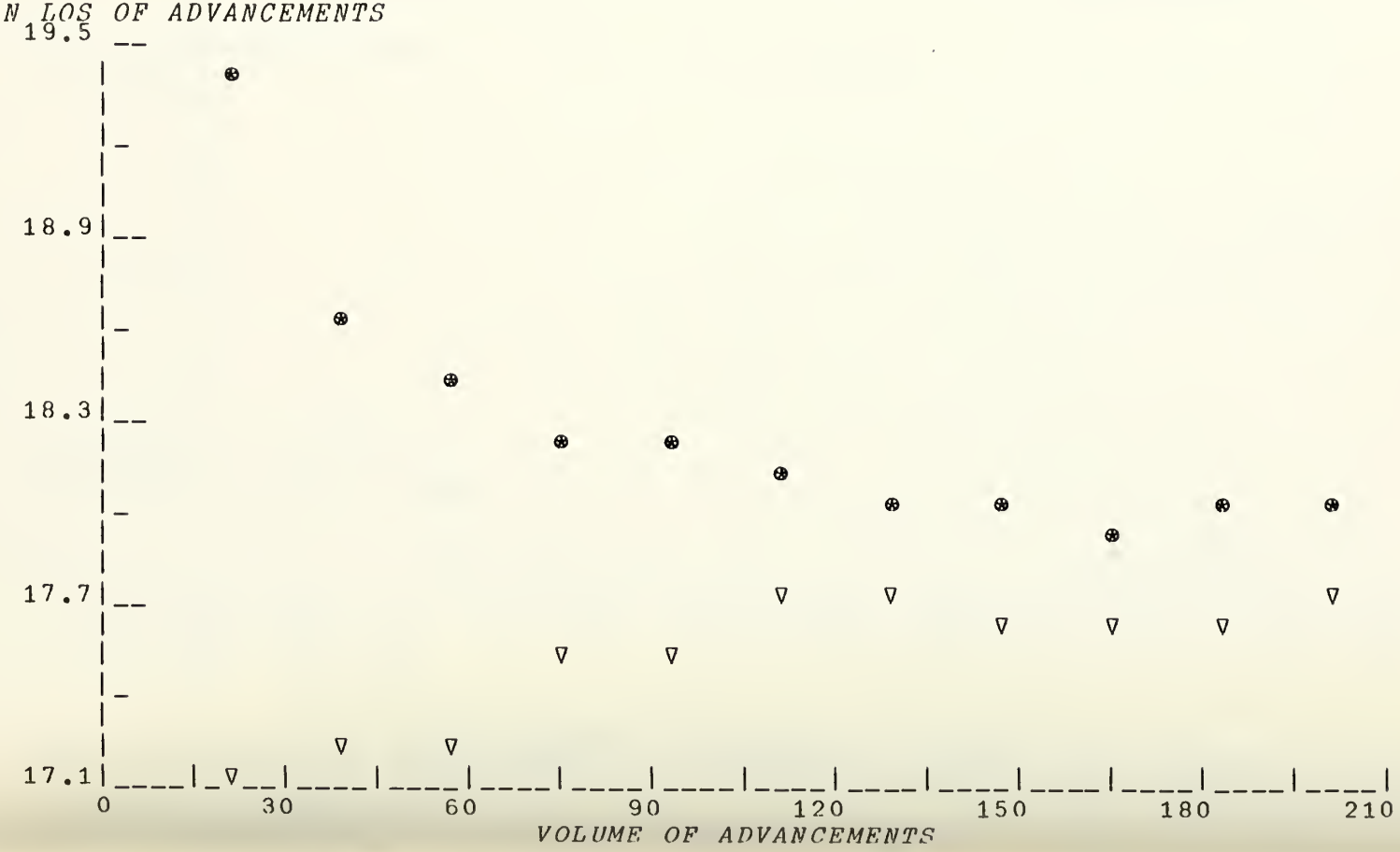
o 1975 YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN
∇ 1971 YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN

RATING=1800 PAY GRADE=8



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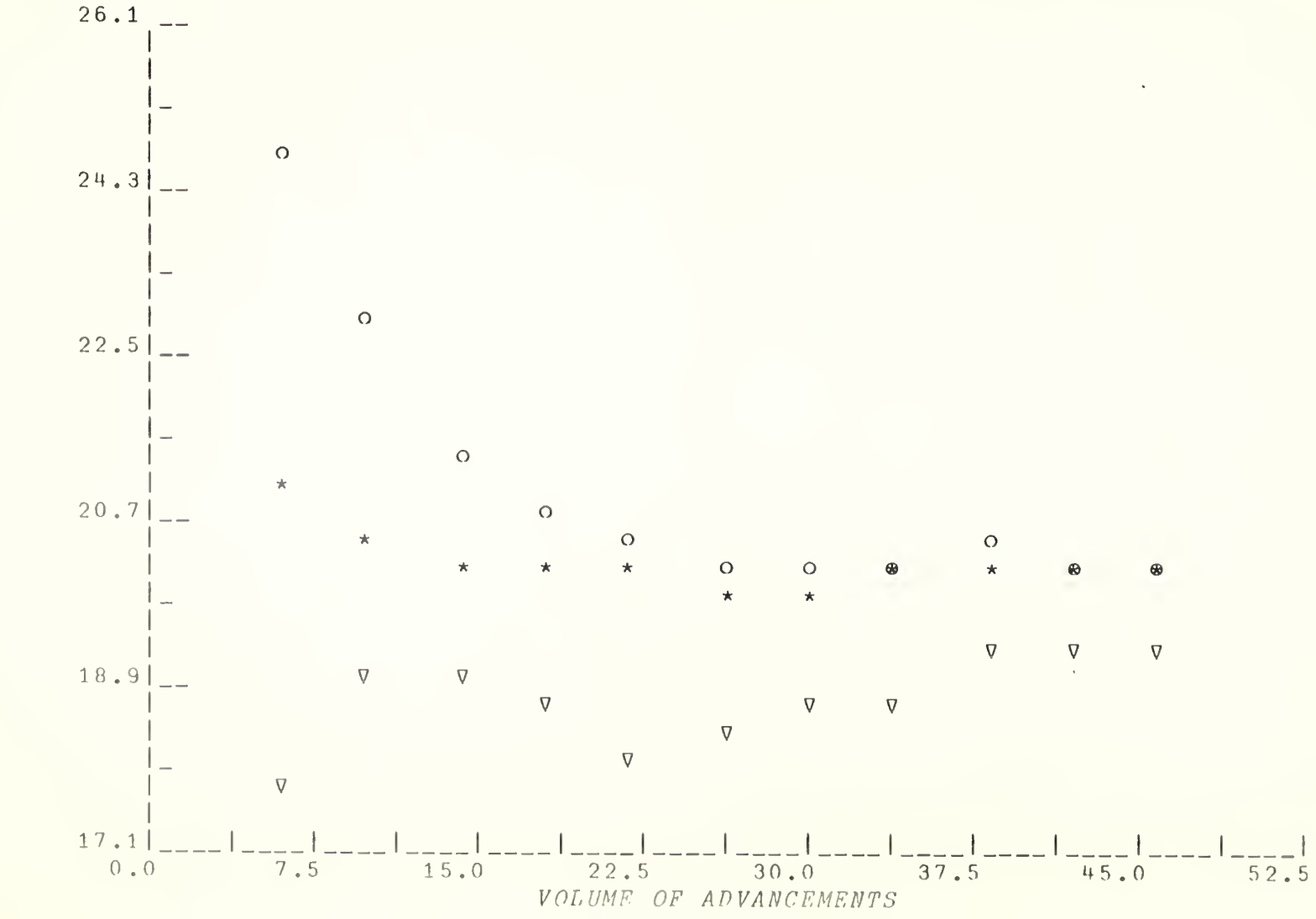
o 1970 *YEAR WHOSE INV. LOS DISTR. GIVES HIGHEST MEAN LOS VALUES OF ADV. MOST OFTEN*
∇ 1973 *YEAR WHOSE INV. LOS DISTR. GIVES LOWEST MEAN LOS VALUES OF ADV. MOST OFTEN*

RATING=1800 *PAY GRADE*=9



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[1] Boller, Robert L., "Design of a Force Structure Model for the Simulation of Personnel Policy." Paper presented at 33rd Military Operations Research Symposium, United States Military Academy, West Point, N.Y., June 25-27, 1974.

[2] FAST. Unpublished Notes, Naval Personnel Research and Development Center, San Diego, California, January 1974.

[3] "Managing the Navy Enlisted Advancement System: An Application of New Methods for the Solution of Multi-Goal Problems," Unpublished Report (1975) by NPRDC Staff, San Diego, California.

[4] "Mathematical Description of the Fast Model," by Joe O'feer, NPRDC Technical Report in press (title approximate) July 1976.

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[6] Ostle, B., "Statistics in Research," The Iowa State Univ. Press, 1963.

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